

Machine and Tool  
**BLUE  
BOOK**

NOVEMBER 1955



REVIEW OF THE  
1955  
MACHINE TOOL  
SHOW

A HITCHCOCK  
PUBLICATION

CONTENTS ON PAGES 5 and 6

IMPORTANT ANNOUNCEMENT!  
See Pages 330-331

# Never Confuse the No. 8 MARVEL with an ordinary Band Saw

*...only the MARVEL is Universal*



Only a No. 8 MARVEL can do all of these things: Snip-off a  $\frac{1}{8}$ " rod or cut-off an 18" x 18" cross section.



Rough to Size and Shape



Miter



Index



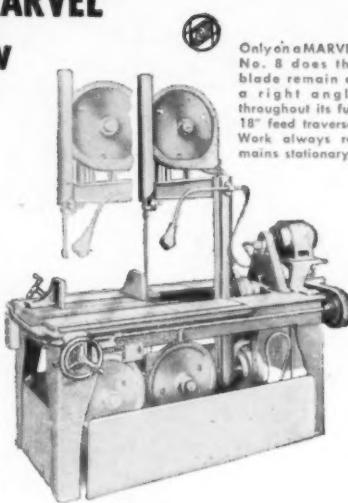
Cut off and shape  
Structural Beams



Only on a No. 8 MARVEL can the saw column be instantly indexed and locked at any angle from 45° right to 45° left, and the saw then fed thru the work at the desired angle — without moving the work.



Only on a MARVEL No. 8 does the blade remain at a right angle throughout its full 18" feed traverse. Work always remains stationary.



Only a No. 8 MARVEL has the large T-slotted work table, with removable quick action vise, that permits accurate set-ups of work of unrestricted sizes and shapes, special fixtures; etc.

## "Rough Machine" to size and shape with minimum chip waste

The No. 8 MARVEL is the "busiest tool in the shop" wherever installed because it is a *universal* tool—has both the capacity and the versatility to handle not only standard sawing jobs but innumerable "trick" and convenience jobs as well. More than a metal saw, the No. 8 MARVEL is a fine machine tool with machine tool features like: Both power and hand feeds; Depth Stops; Automatic Blade Tension; Built-in Coolant Pump; Three operating speeds (or six with 2-speed motor). Moisture-proof electrical controls that conform to both "J.I.C." and "MACH-INE TOOL" electrical standards; Dirt-proof ball bearings, etc.

If you cut, machine or fabricate metal, this is a sawing machine you should know about. Write for catalog.



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and Finishes  
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HONING



## Honing Cuts Production Costs of Bronze Pump Housings

*Accurate Parts Turned Out at the Rate  
of 75 per Hour on Sunnen Honing Machines*

**PROBLEM:** The 3" long cylinder in this bronze housing, made by Tuthill Pump, required removal of about .003" stock, to meet close operating tolerances. Two ports opening into the cylinder made precise geometrical sizing difficult.

**SOLUTION:** By demonstration at the Tuthill plant, the Sunnen Honing Engineer showed how honing could finish the cylinders to a diameter of 1.4990"-1.4995", at the rate of 75 parts per hour. Holes are geometrically round with no "washout" at ports.

**Honing may be your answer, too...** Sunnen Honing is a practical, cost-reducing method for finishing holes in rotating or sliding parts—of all shapes

and sizes—usually without jigs or fixtures. Accuracy is guaranteed within .0001". Surface finish as low as 2 micro-inches RMS in hardened steel. Dia. range is  $\frac{1}{8}$ " to  $2\frac{3}{8}$ ". Average installation under \$1000—in operation within three weeks.



**Honing department-on-wheels may solve your problem.** For more information on how you can check the advantages of Sunnen Honing, right in your plant, on your own parts, at no obligation, mail the coupon.

### FREE BOOKLET

shows 105 typical honing  
jobs—case histories—  
production rates.



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882A

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Company.....

Address.....

City.....Zone.....State.....

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**SMALL FLAT ANVILS**



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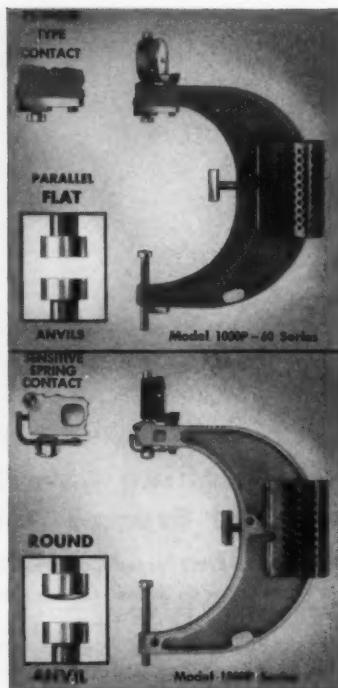
**RETRACTING ANVIL**



**RUGGED  
SPRING TYPE**



**RUGGED  
PLUNGER TYPE**



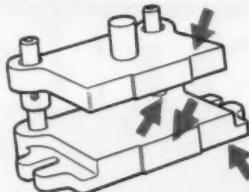
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These Gages are made to meet all the usual physical and accuracy needs of gage users. They can be had in a wide range of sizes and can be modified to suit particular needs. If you haven't seen just what you *must* have, ask us about what you want. We also make Air Snap Gages.

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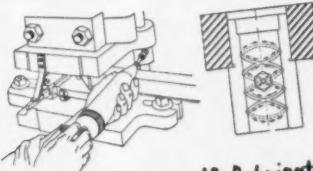
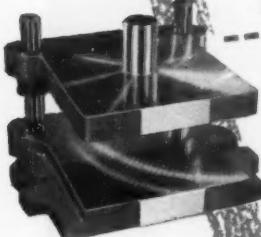
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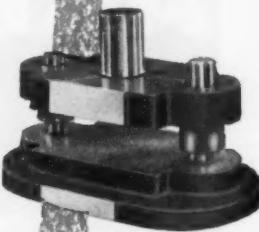
all horizontal surfaces ground

Now, in addition to the vital die surfaces of all steel or semi-steel sets, all horizontal surfaces, including tops of punch holders, are ground with the same precision that has made Danly quality the accepted standard. Surface grinding assures a flat, true working surface, saves tooling time and improves accuracy.



Shoulder bushings oil lubricated

All Danly Standard Sets equipped with shoulder bushings are designed for easy, pressurized oil lubrication. Fittings in bushing shoulder are easily reached from front or side. Cut-away sketch shows oil channels in bushing that form lubrication reservoir for long runs and maintain oil film with a minimum of clogging or gumming.



## New features like these keep DANLY ahead

Throughout the years, the rigid precision standards of Danly have made Danly Die Sets the recognized standard for quality. Now Danly Die Sets offer you two new features to save hours in the die shop, make tooling-up much faster and assure longer die life. All new Danly Die Sets have an oil lubrication

system for shoulder bushings and all horizontal surfaces are ground to assure a true working surface for die making. Danly's nationwide system of assembly branches is ready to serve you. Call Danly today.

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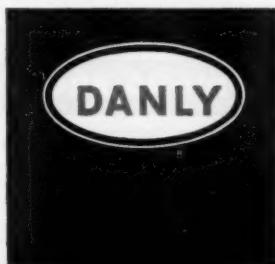
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BPA

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**Hitchcock District Managers are Listed on Page 64.**

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WITH

## FULMER HONING MACHINES

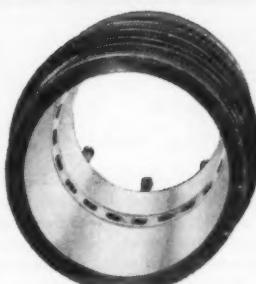


Illustration shows electromotive Diesel liner before and after being honed to .030" oversize.

**NEW AUTOMATIC** loading fixtures

**NEW AUTOMATIC** hone withdraw

**NEW AUTOMATIC** time cycle

**NEW AUTOMATIC** continuous,  
remote controlled feeding and retract-  
ing honing tools.

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THE NEW FEATURES**

**FUNDAMENTALLY**  
the same rugged,  
work-devouring  
dependable hon-  
ing machines but  
with these radi-  
cal important  
changes.

*They assure you*

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November, 1955

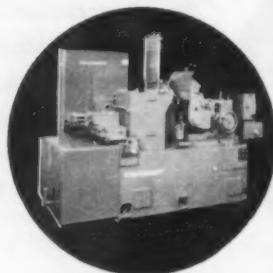
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# Review

**of CINCINNATI**  
**- exhibited at**

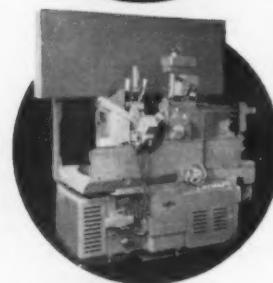
Did you see everything at the recent Machine Tool Show? Did you see how the new equipment could improve quality and reduce manufacturing costs for your products? In the event that you missed some-

thing, or perhaps stayed on the job, you'll be interested in this review of five new CINCINNATI FILMATIC Grinding Machines spotlighted from Cincinnati Milling's 43-machine exhibit.



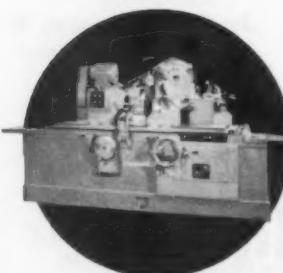
## New CINCINNATI FILMATIC No. 3 Centerless Grinding Machines

are completely new from the floor up. Cost-reducing features include anti-friction lower slide; infinitely variable regulating wheel drive; power profile grinding wheel truing; stabilized infeed screw. Extra equipment includes automatic grinding wheel balancing and bar grinding attachments for work up to 24 feet long. Many other attachments are available, including Automatic Infeed, Feedmatic Hoppers, various types of Workrests, etc. Write for catalog No. G-664.



## New CINCINNATI FILMATIC Micro-Centric Grinding Machines

like their predecessors, perform the miracle of combining high production with working gage accuracy. New Micro-Centric features include magnetic drive plate which greatly reduces loading time; front handwheel control with fine and coarse adjustment positions; machine mounted cabinet for complete and accessible electrical controls. Ask for catalog No. G-662.



## New CINCINNATI FILMATIC Semi-Automatic Angular Wheel Slide Grinding Machines

drastically reduce the cost of precision cylindrical work requiring accurately ground diameters and adjacent shoulders. Both are completed in one automatic infeed cycle. These machines, built in 6"R, 10'L, 10"R and 14"L swing sizes, are equipped with Automatic Grinding Wheel Balancing. Get your copy of catalog No. G-647.

# FILMATIC GRINDING MACHINES

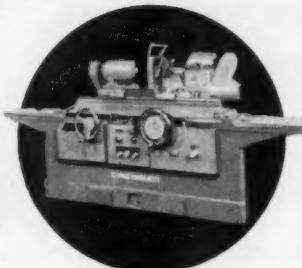
## the Show...



### New CINCINNATI FILMATIC

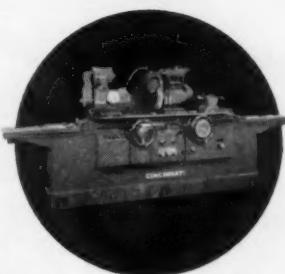
#### Plain Hydraulic Grinding Machines

are more convenient to operate and more accurate in performance than ever before. In addition, Automatic Grinding Wheel Balancing, a feature that will pay off handsomely in your shop, is included with standard equipment. The following types of production equipment are available: Push-button Automatic Infeed Attachment; Automatic Gap Eliminator; Behind-the-wheel Profile Truing; Automatic Electric Gage Sizing with Automatic Compensation. Get the complete story in the following catalogs . . . 6"R and 10"L machines, G-660; 10"R and 14"L machines, G-661.



### New CINCINNATI FILMATIC 12", 14" and 18" Hydraulic Universal Grinding Machines

New features of productivity and accuracy are incorporated in the new CINCINNATI FILMATIC 12", 14" and 18" Hydraulic Universal Grinding Machines. Pickfeed rates are infinitely variable, and may be engaged at the right, left, or both ends of the stroke; the footstock spindle is now chromium plated to prevent wear; headstock speeds are selected with an easy-to-turn dial; rapid cross traverse feature available. Want more information? Ask for catalog No. G-663.



Of course, Cincinnati builds many more precision grinding machines than those illustrated here: six Centerless Grinders; Plain, Universal and Roll Grinding Machines from 4" to 60" swing, and

special grinding machines. There's a size, type and style for your requirements. Would you like to have more information? Write for catalogs on the machines in which you are interested.

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# CINCINNATI



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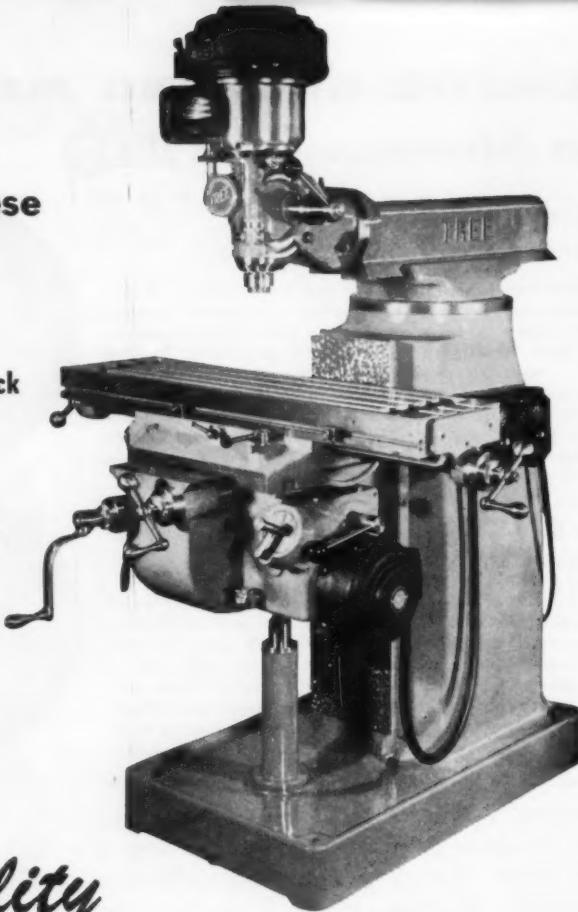
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# **The TREE 2UV MILL gives you these features—**

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- **One Clamp Turret Lock**
- **Automatic Collet Closer**
- **Built-In Power Feed**
- **Rapid Traverse**
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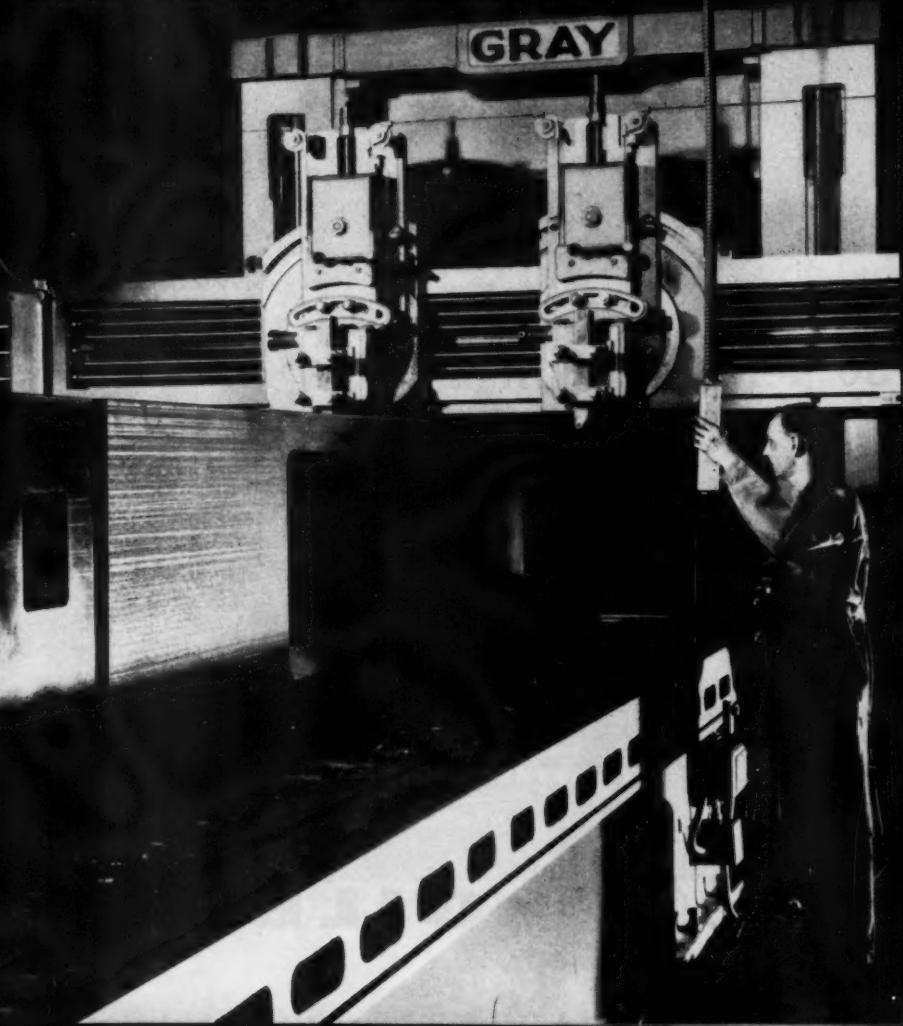
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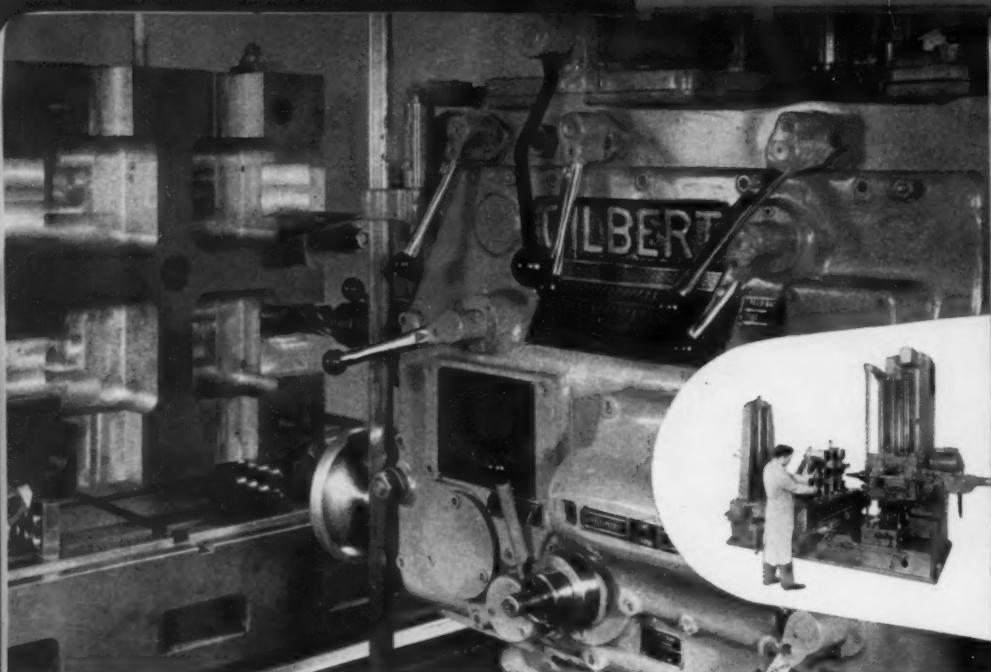
# *Magnificent monster*

The GRAY is recognized by machine shops throughout the world as the ultimate in planers. Built for high production with great precision, it combines more original engineering developments and production features than any other planer. It is in such demand that GRAY is the largest planer builder, further proof that

*Quality doesn't cost . . . it pays.*

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How's this for a perfect lineup: 30% savings in floor-to-floor time over previous machines, and  $\pm .001$ " for mating the two chases of a four-cavity carburetor bowl mold.

Mohawk Tool & Die Corp., Rochester, N.Y., gets these savings and accuracy by handling the job on a Cincinnati Gilbert horizontal boring mill.

Here the lower chase (of hot work die steel) is being rough machined. Then it's hardened to a Rockwell of 48-50C scale. Finally, the chase is finish machined with carbide to an accuracy of  $\pm .001$ " for guide pin and bushing holes, four

cavity pockets, and eight slide ways.

Says Mr. George Neward, Mohawk's Secretary-Treasurer: "This job illustrates the flexibility of this type of machine. The ruggedness and stability of the Cincinnati Gilbert has been proven to us without doubt."

The comparatively low cost of adding these advantages to your operations will surprise you. Write for new literature, or—better yet—get a proposal from Gilbert now.

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*those who buy Gilbert buy* **GILBERT** again

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November, 1955

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**GREATER COOLING POWER**  
better finishes—tools last  
longer—increased production

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continues to give highest machining efficiency

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MACHINE and TOOL BLUE BOOK

# Prutton

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ROLLING  
MACHINERY

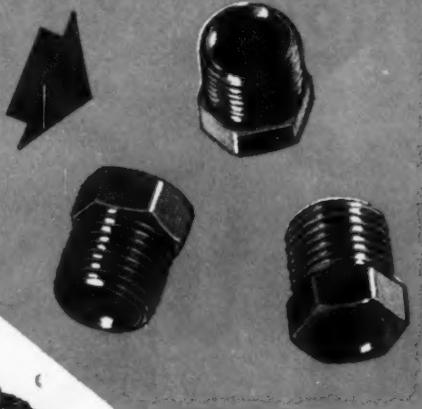
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**RUNNING 3 SIZES!**

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3/8" — 24 Thread — 3/16" Hole



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November, 1955

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Read off the headlines Morse has made in the last few years! Hi-Helix End Mills . . . the Ambore Drill . . . Morse Electropolizing . . . new teletype-telegraph network to speed up service . . . then the sensational "Vectormatic" Ground Taps . . .

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for every job in your plant . . . be it carbon, high speed or carbide. He's backed by Morse's years of experience in carbide tooling . . . and he's the one man who has the most in cutting tools. *Call him in today.*

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Warehouses in New York, Chicago, Detroit, Dallas, San Francisco

**NOW...more than ever**  
**MORSE**  
means  
**"THE MOST"**  
in cutting tools

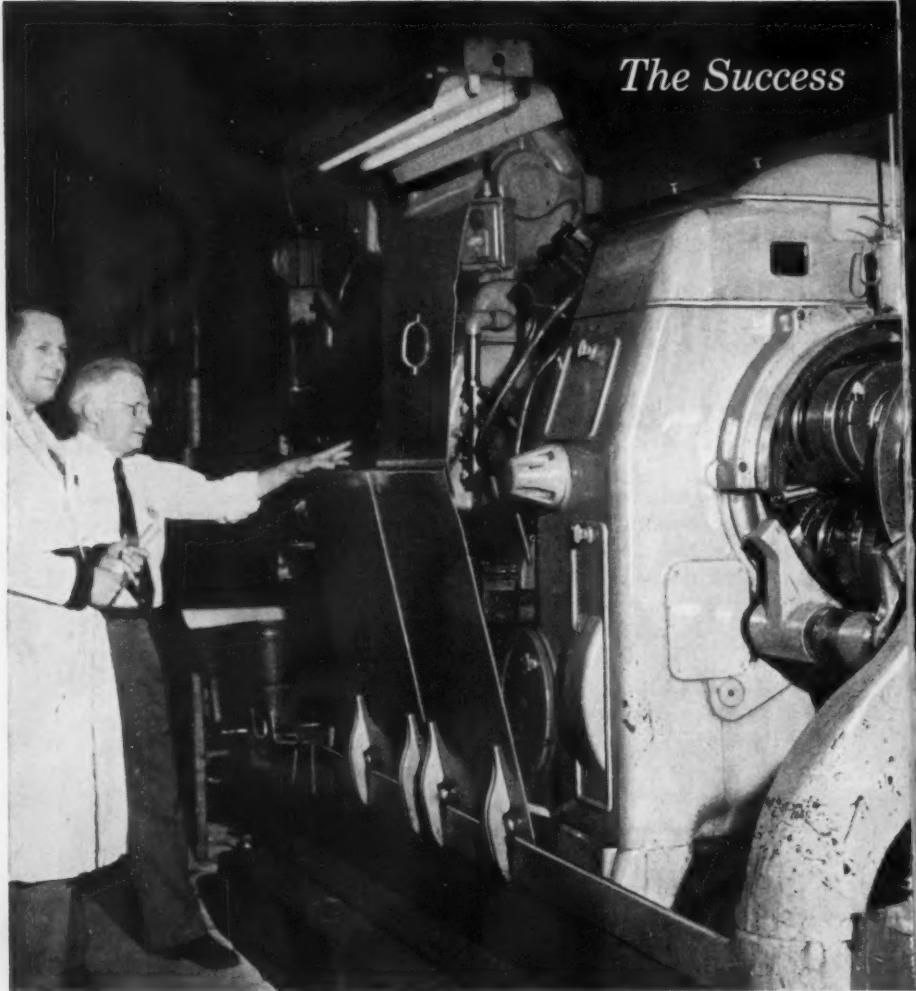


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November, 1955

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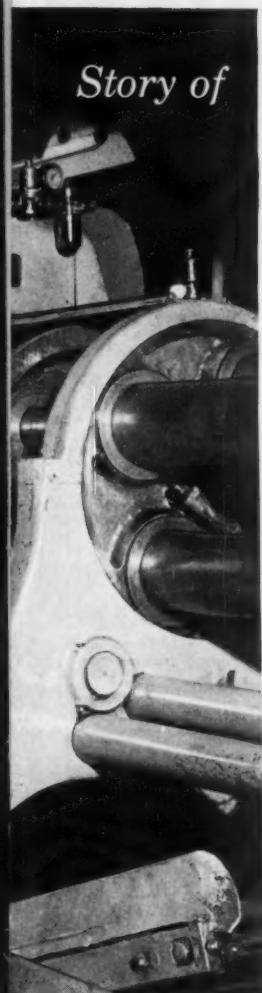
*The Success*



## More than a "Coolant" is needed

Plants in: Chicago, Detroit, Cleveland,  
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Branch Warehouses and Representatives in principal metal working centers in the United States, Canada and Europe.



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*... a boost for  
screw machine output!*



*The Success of SpeedKut A . . . is an oft repeated story of increased output, better tool life and less down-time.*

SpeedKut A is a product of Stuart's sulpho-chlorination processing that provides absolute uniformity and stability. Highly effective chemical additive materials are pre-balanced under strict laboratory supervision to instill SpeedKut A with the anti-weld and friction reducing characteristics necessary to the range of machining operations for which it is recommended.

When selecting a cutting fluid, factors to be considered are material being machined, material hardness, speeds, feeds, depth of cut and machine design. Cullman Wheel Company, Chicago, Ill., a leading sprocket manufacturer, took all these factors into consideration more than 10 years ago. They chose SpeedKut A then and still use it for their multi-spindle automatics to cut sprocket blanks from free machining bar stock and for hobbing the sprocket teeth.

"The Man in the Barrel", your Stuart Representative, will be happy to help you take all of the factors into consideration. Ask to have him call—and ask for a Stuart's Cutting and Grinding Fluid Selector and Dilut-O-Graph Folder, too. It's a quick guide to starting recommendations for any job.

**D. A. STUART OIL CO., LTD. 2749 S. Troy St., Chicago 23, Ill.**



## Stuart Oils

Time Tested Cutting Fluids and Lubricants

Encircle No. 215 on Card, Opposite Page 65

November, 1955

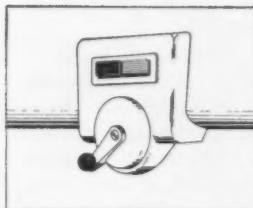
21

# 2 New CINCINNATI PRESS BRAKES

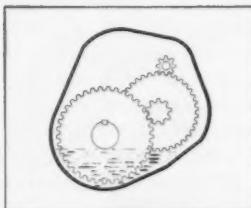
THIRTY TON - - - - 2-30 SERIES

FIFTY TON - - - - 3-50 SERIES

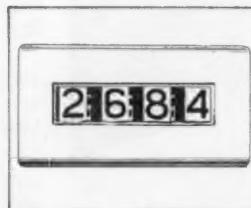
COMPETITIVELY PRICED



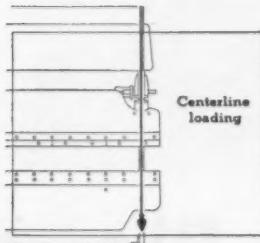
Front controlled, variable speed drive, 20 to 50 strokes per minute.



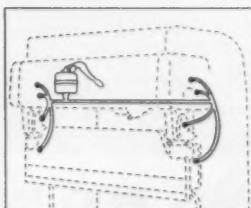
Completely enclosed transmission, running in oil.



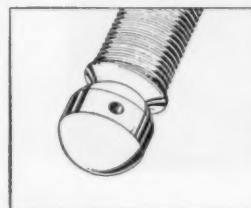
Two micrometer indicators, one at each end of the ram—easy to read and accurately record the amount of adjustment and tilt.



Centerline loading prevents weaving of the housings and insures accurate bends.



Centralized pressure lubrication system.



Ball end on the ram adjusting screws permits tapering of the ram for fade-out work.



THE CINCINNATI SHAPER CO.

CINCINNATI 25, OHIO, U.S.A.

SHAPERS • SHEARS • BRAKES

## 2-30 SERIES

This new 2-30 Series Cincinnati All Steel Press Brake has a capacity of 14 gauge x 6' mild steel.

Look at these unusual standard features:

2½" stroke—12" shut height—9" throat.

Distance between housings 5'-2"—overall die surface, 6'-0".

Front controlled, variable speed drive, 20 to 50 SPM. 4" manual ram adjustment including ram tapering adjustment for fade-out work (power adjustment available as extra feature).

Bronze swivel end-guide bearing for accurate endwise alignment, even when tilting ram.

Brushless electro-magnetic brake and clutch.

Deep bed and ram, planed and drilled for 5¾" angles.

Micrometer indicators on both ends of ram for fast, accurate setting.



## 3-50 SERIES

These new 3-50 Series Cincinnati All Steel Press Brakes are built in two lengths and have a capacity of 10 gauge x 6' mild steel. Investigate these unusual standard features: 3" stroke—12" shut height—12" throat—distance between housings 6'-6" or 10'-6"—overall die surface 8'-0" or 12'-0"—front controlled, variable speed drive, 20 to 50 SPM.

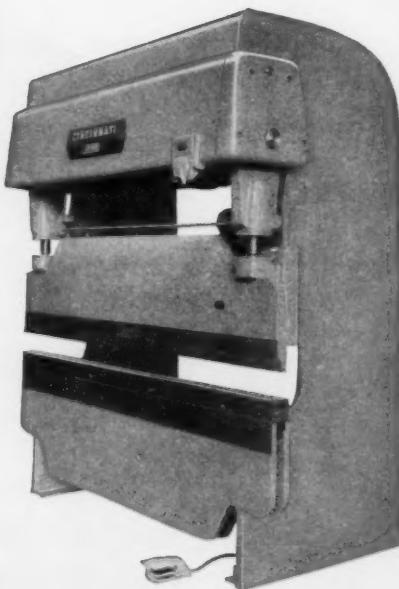
5" motorized ram adjustment, including ram motor and control, complete with ram tapering adjustment for fade-out work.

Bronze swivel end-guide bearing for accurate endwise alignment, even when tilting ram.

Brushless electro-magnetic brake and clutch.

Deep bed and ram, planed and drilled for 5¾" angles.

Micrometer indicators on both ends of ram for fast, accurate setting.



Encircle No. 216 on Card, Opposite Page 65

**IT'S  
ALL NEW!**

**IT'S  
THE FIRST!**

it's the greatest advancement in OBI press history

**NIAGARA**

**FRONT-TO-BACK**

**ALL NEW** rugged, front-to-back crankshaft with huge crankpins

**ALL NEW** compact, fully concealed driving mechanism

**ALL NEW** enclosed, rigidly supported gearing in sealed oil bath

**ALL NEW** electro-pneumatic friction clutch on crankshaft

**ALL NEW** wider spaced, longer, narrower gibbs

**ALL NEW** wider, box type slide all within gibbing

**ALL NEW** precision, hardened, longer-wearing gears

**ALL NEW** compact, straight-line, space-saving frame

Hailed as the greatest achievement in modern OBI press design and performance, by over 100,000 spectators who examined this mechanical marvel at the Machine Tool Show, the all-new Niagara Series E, Single Point, Open Back Inclinable Press starts a brand new chapter in press history.

It's years ahead of any OBI ever built. It's an industrial revolution all by itself. No other press, in modern times, embraces so many "All-New" features.

Gone are exposed, overhanging gears, flywheel and other mechanisms. Gone is excessive and damaging crankshaft deflection. Here to stay are: Full support to wide dies. Greater

resistance to off-center loading. Accurate alignment of slide, with minimized tendency to cock. Substantially increased die life. Longer lasting, hardened gears. Smoother, safer press performance. Smaller floorspace requirements.

Built in 4 sizes, with shaft diameters from 4 1/2 to 7 1/2 inches and capacities from 75 to 200 tons, the new Series E is available in both standard models and automation models equipped with the most advanced controls and devices for peak production. A complete description of both, with full specifications, is given in new Bulletin 56, sent promptly on request.

SEND FOR NEW BULLETIN . . .



**NIAGARA MACHINE & TOOL WORKS • BUFFALO 11, N. Y.**

DISTRICT OFFICES: Buffalo • Cleveland • Detroit • New York • Philadelphia

Dealers in principal U. S. cities and major foreign countries.

America's Most Complete Line of Presses, Shears, Machines and Tools for Plate and Sheet Metal Work.

# CRANKSHAFT OBI PRESS DESIGN

**STANDARD DESIGN**  
For General Purpose Production

**MODIFIED DESIGN**  
For Automation Lines



## *... the preferred dial indicators*

TIME-TESTED FOR ACCURACY AND DEPENDABLE PERFORMANCE!

For more than half a century, industry has relied on Ames indicators for help in the solution of measurement problems of all kinds. And through the years, Ames indicators have done their jobs superlatively well. The Ames reputation for extreme accuracy, ruggedness and reliability through many millions of cycles is due to an unswerving dedication to our original guiding principle—to make the best possible indicators and gauges, through constant research and the use of highest quality materials and expert craftsmanship.

We will gladly make recommendations on your measurement problems. Please send blueprints and specifications. And ask for your free copy of the Ames catalog.

Representatives in principal cities



# B.C. AMES CO.

28 Ames Street, Waltham 54, Mass.

MANUFACTURER OF MICROMETER DIAL GAUGES • MICROMETER DIAL INDICATORS  
Encircle No. 218 on Card, Opposite Page 65

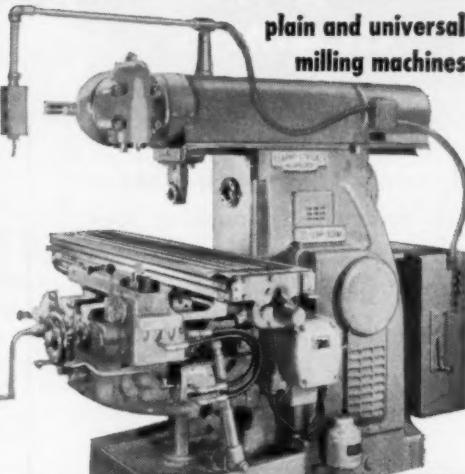
# Kearney & Trecker's NEW RAM HEAD

KEARNEY & TRECKER'S new line of Ram Head milling machines combines a conventional horizontal spindle and a self-contained motorized sliding ram. As a result, horizontal and vertical spindles can be run separately and simultaneously.

The Ram Head machines are available with a choice of three heads — Universal, Vertical and Quill types which can be rotated through 360°. You can perform vertical, horizontal and angular milling on one machine in a single setup. They are built in model CH, CK and CSM designs with 69 different machines in sizes from No. 2 to No. 4 in both plain and universal styles. Machines may be equipped with either Standard Directional Table Control, or Mono-Lever and Automatic Cycle Table Control.

For the full story, contact your nearest Kearney & Trecker representative, or write Kearney & Trecker Corp., 6784 West National Ave., Milwaukee 14, Wisconsin.

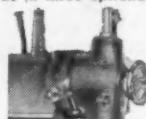
20/10 hp No. 3 Model CSM, Plain, Ram Head machine with Mono-Lever and Automatic Cycle Table Control, Type U Universal Head.



with choice of three types of heads  
(Eight spindle speeds in three optional ranges)



Type U Universal  
Swivel Head  
has two graduated bases  
at right angles to each  
other, both can be  
swiveled thru 360°

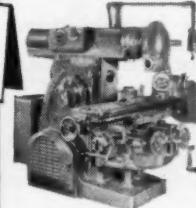


Type Q Adjustable  
Quill Swivel Head  
has 3 1/2" movement...  
micrometer stop and  
dial indicator. Spindle  
can be set at any angle  
through 360°



Type V Vertical  
Swivel Head  
adapted for vertical and  
angular milling. Spindle  
base is graduated...  
can be set thru 360°.

available for  
**TOOL-LEASE**



7 1/2 hp No. 3 Model CH,  
Universal style Ram Head  
milling machine with  
Standard Directional  
Table Control and Type U  
Universal Head.

## FREE CATALOGS!

Ask for catalog No. RH-10A  
describing Ram Head Plain  
and Universal milling ma-  
chines, and Tool-Lease bul-  
letin, TL-10A. See our  
catalog in SWEET'S.



# Kearney & Trecker Corporation

MILWAUKEE 14, WISCONSIN

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November, 1955

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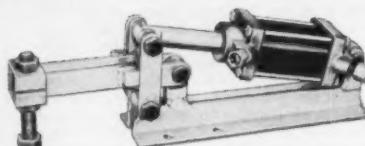
## HEAVY-DUTY AIR CLAMPS

If you are developing a fixture to hold an automobile panel or other large assembly, it's a good idea to have the clamps rated to the job they're expected to do. In other words, never send a boy to do a man's job!

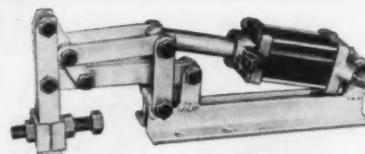
You can get husky, heavy-duty clamps from Lapeer—clamps which are built to stand up under the knocks and abuses of busy production lines. These clamps are air or oil operated—designed to grab tightly, let go quickly. Failure of air or oil pressure will not release the clamps, thus eliminating the possibility of scrappage.

Pictured are just two of several heavy-duty models available.

*Never send a boy  
TO DO A  
MAN'S JOB*



AO-400 (HD)



AODT-400 (HD)  
Double-Toggle Type

SEND FOR  
OUR CATALOG  
NOW!



Manufacturers of a complete line of Stationary and Portable Clamps and Pliers

**KNU-VISE  
PRODUCTS**

**LAPEER MANUFACTURING CO.**

3052 DAVISON ROAD

WESTERN DIVISION: 422 Magnolia, Glendale, California

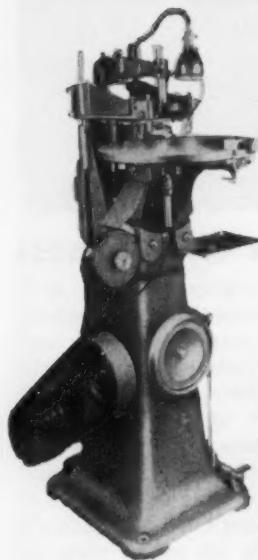
• LAPEER, MICHIGAN  
CANADIAN DIVISION: Higginson Engr., Hamilton, Ontario

Encircle No. 220 on Card, Opposite Page 65

MACHINE and TOOL BLUE BOOK

*You,* Like Thousands of Others,  
Can Cut Die Making Costs

with OLIVER DIE MAKING MACHINES



Dependable and proved are OLIVER Die Makers. They reduce costs as much as 60% because they simplify sawing, filing and lapping operations. The Oliver Method saves time and does not require expensive, hard-to-get skilled labor. These efficient, speedy and accurate machines have proved themselves in more than 10,000 installations throughout the world. In many plants these durable OLIVERS have been in constant use for over 25 years.

For nearly 40 years OLIVER DIE MAKING MACHINES have been found invaluable on such jobs as Production Filing, Experimental Work, Metal Patterns, Cams, Gages, Templates, etc. Improve your toolroom efficiency . . . For better dies — saw and file with OLIVER DIE MAKING MACHINES.



**OLIVER DIE MAKERS Available in 5 Models**

The Bench Model 5-1 (illustrated) is a single speed die maker for use on tool steel up to 1" thick.

The Heavy Duty Model (illustrated) has 6 speeds, works in metal up to 3" thick, has variable strokes to 5" with hydraulic feed.

Write Today For Complete Technical Data on  
OLIVER DIE MAKERS  
See our catalog in Sweet's Directory.

**OLIVER INSTRUMENT CO.**

1408 E. MAUMEE • ADRIAN, MICHIGAN

**MACHINE TOOLS**  
by OLIVER include:

AUTOMATIC DRILL GRINDERS  
TOOL & CUTTER GRINDERS  
DRILL POINT THINNERS  
TEMPLATE TOOL GRINDERS  
FACE MILL GRINDERS  
DIE MAKING MACHINES

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# HOW TO BUY CUT-OFF WHEELS

## FOR CLEANER CUTTING AND LONGER WHEEL LIFE

**.. "More Use per Dollar"**

Look for a wheel specially engineered and bonded to give you maximum cutting efficiency for your particular cut-off operations.

Safe, fast, clean metal cutting for sustained periods with a wheel that cuts freely, means savings in both time and money. You should look for a wheel that permits you to cut at high speed without burning, one that will leave no burr or discoloration and will last longer. To give you these advantages, the wheel you buy should be custom-bonded for your specific cut-off job . . . to assure smooth, free-cutting action whether you work with hardened or soft steel, light gauge tubing, critical alloys, etc.

Specify the wheel designed specifically for improved cutting on *your* job . . . specify Manhattan Cut-Off Wheels.



RM-527-R

WRITE TO ABRASIVE WHEEL DEPARTMENT

MANHATTAN RUBBER DIVISION — PASSAIC, NEW JERSEY

**RAYBESTOS-MANHATTAN, INC.**

Manufacturers of Mechanical Rubber Products • Rubber Covered Equipment • Radiator Hose Fan Belts • Brake Linings & Blocks • Clutch Facings • Packings • Asbestos Textiles Engineered Plastic, and Sintered Metal Products • Abrasive & Diamond Wheels • Bowling Balls

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MACHINE and TOOL BLUE BOOK



## MANHATTAN CUT-OFF WHEELS

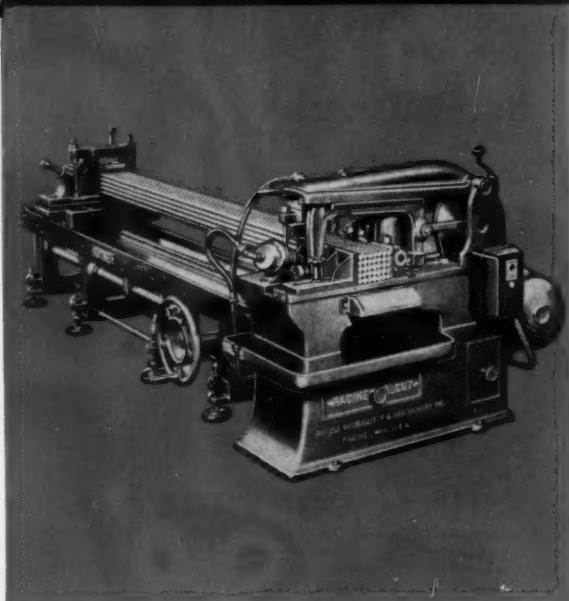
Manhattan developments in both rubber and resinoid bonds have greatly increased the cutting efficiency and long life of Manhattan Cut-Off Wheels. In factories where records are kept of the number of cuts per wheel, Manhattan wheels have proved they do a better job, longer . . . permit faster, cleaner cutting on *all* types of metals. Manhattan Cut-Off Wheels are manufactured in the widest range of types and sizes. Manhattan sales engineers will aid you in specifying the exact one for your operations and show you how you can save time and money —get "More Use per Dollar"—at your plant with Manhattan Cut-Off Wheels and other types of high speed, heavy duty wheels.

# RACINE

## *Automatic* STOCK FEED MACHINES

### FEATURING

- Hydraulic Operation
- Progressive cutting feed
- Simplified Control
- Automatic measurement of cuts
- 6" x 6" to 12" x 16" capacities



Racine Machines are used to cut billets, single bars, tubes or bundled material from aluminum to the hardest tool steels and alloys. These Automatic Machines can cut up to 20 square inches of material per minute depending upon the type of metal. You can obtain many production economies in your metal cutting work.

Catalog is available describing RACINE'S complete line of Metal Cutting Machines. Address **RACINE HYDRAULICS & MACHINERY, INC.** 2054 Albert St., Racine, Wisconsin.

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November, 1955

# GRIND WARPED PIECES *Without* SHIMMING



**No Guesswork!**

**Increased**

**Production!**

*Save Time With*

**NEUTROLATOR**

**Holding Power  
REGULATOR**

and

**CHUCK CONTROL**

Neutrolator Electro Magnetic Chuck Control provides regulation of holding power which permits grinding without shimming, to closer parallelism than ever before possible.

In production grinding where holding power must be the same with each work piece, Neutrolator reproduces the same tension on successive pieces without readjustment. Where various tensions are required, a simple dial or pushbutton control provides regulation of holding power. Neutrolator affords complete control of electro magnetic chuck at all times . . . protects chuck from harmful voltage surges . . . demagnetizes both chuck and work piece . . . facilitates easy removal of work, thus eliminates marred surfaces.

**Write for Descriptive Circular**

Telephone: BELmont 5-4010

**ELECTROMATIC PRODUCTS CO.**

2235 N. KNOX AVENUE

CHICAGO 39, ILLINOIS, U.S.A.

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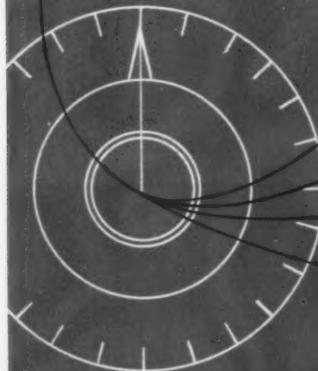
MACHINE and TOOL BLUE BOOK

# R AND L TOOLS

*your combination...*

**TO LOWER COSTS . . .  
GREATER PROFITS!**

In this day and age of  
AUTOMATION set-up time is a prime  
cost factor. Cut your set-up time by  
as much as 75% with R and L TOOLS.



R and L TOOLS are masterpieces of the tool-  
maker's art . . . guaranteed not to bend or  
give way. Thousands of users attest that they  
pay for themselves in no time!

**R AND L TOOLS**

1825 BRISTOL STREET • PHILADELPHIA 42, PA.

TURNING TOOL • CARBIDE OR ROLLER BACKRESTS • RELEASING OR NON-  
RELEASING TAP AND DIE HOLDERS, (ALSO FURNISHED FOR ACORN DIES)  
• UNIVERSAL TOOL POST • CUT-OFF BLADE HOLDER • RECESSING TOOL •  
REVOLVING STOCK STOP • FLOATING DRILL HOLDER • KNUURLING TOOL



**R and L  
TURNING TOOL . . .**

Changes in 10 seconds for right or left  
turning, and replaces an assortment of  
14 tools costing more than five times  
that of one R and L Turning Tool.



**R and L  
KNUURLING  
TOOL . . .**

Half the weight . . . twice as efficient  
as other knurling tools. One hex  
wrench makes all adjustments.



**R and L  
TAP AND  
DIE HOLDERS . . .**

New release mechanism makes right or  
left threading possible . . . an exclusive  
R and L feature.



**R and L  
RECESSING  
TOOL . . .**

Can be adjusted to operate on an  
internal diameter within capacity  
of machine . . . newly designed.



## Write for New Catalog

**R and L TOOLS**  
1825 BRISTOL ST.  
PHILADELPHIA 42, PA.

Please send me your new catalog  
 Please arrange for no-obligation  
demonstration of R and L TOOLS

NAME \_\_\_\_\_

COMPANY \_\_\_\_\_

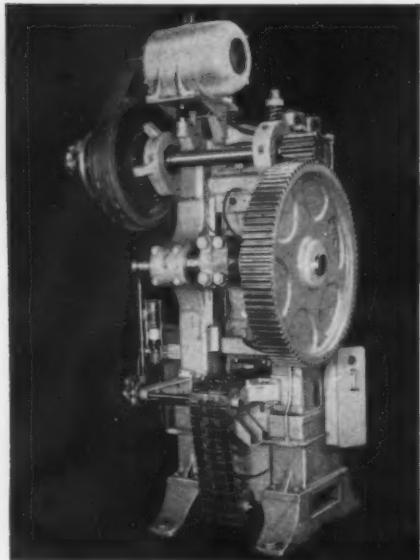
ADDRESS \_\_\_\_\_

BB-4

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## FERRACUTE E-401 EMBOSSING PRESS Eliminates Expensive Milling Operations For Automotive Manufacturer

Produces rocker arms for intake and exhaust valves two at a time—30 strokes per minute—total production 3,600 pieces per hour. Ferracute top toggle, tie-rod construction Embossing

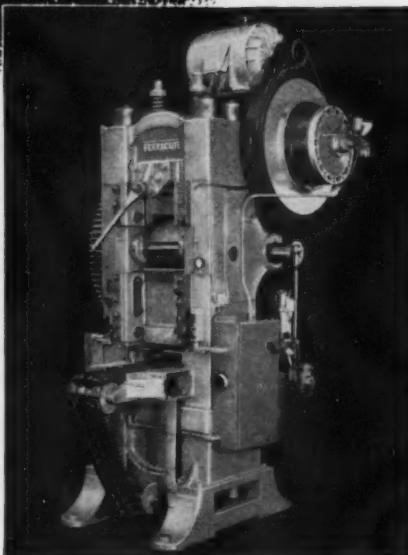


Presses are available in a complete range of sizes from 150-ton to 1,500-ton. Ruggedly constructed and extremely powerful, these presses may often be used to move the metal cold and thus replace costly milling operations.

**Our engineers will be glad to survey your production with an eye to similar economics. Write for complete information.**

Since 1863 Manufacturers of Power Presses, Press Brakes and Special Machinery

**Ferracute Machine Co.**  
Bridgeton, N.J., U.S.A.



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MACHINE and TOOL BLUE BOOK

# NEW ALL POSITION IRON POWDER ELECTRODE



Welds like Jetweld  
DOWNHAND



Welds like Fleetweld  
VERTICAL & OVERHEAD



*Improved*  
**FLEETWELD 47**

faster, smoother, easier to handle

**TRY IT!**

**THE LINCOLN ELECTRIC COMPANY**

Dept. 3605, Cleveland 17, Ohio

*The World's Largest Manufacturer of Arc Welding Equipment*

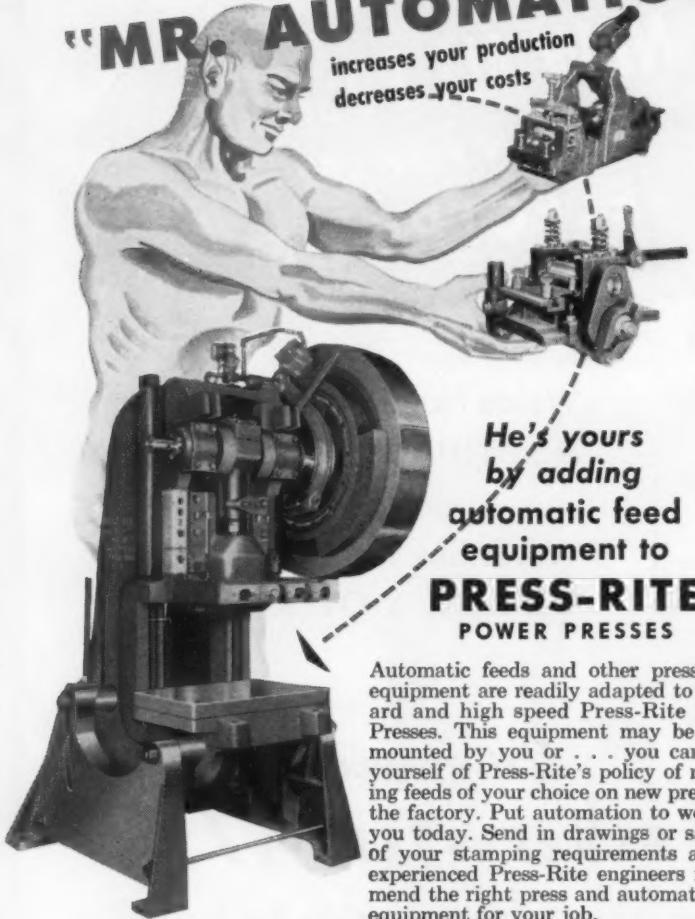
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November, 1955

35

# "MR. AUTOMATION"

increases your production  
decreases your costs



He's yours  
by adding  
automatic feed  
equipment to  
**PRESS-RITE**  
POWER PRESSES

Automatic feeds and other press room equipment are readily adapted to standard and high speed Press-Rite Power Presses. This equipment may be easily mounted by you or . . . you can avail yourself of Press-Rite's policy of mounting feeds of your choice on new presses at the factory. Put automation to work for you today. Send in drawings or samples of your stamping requirements and let experienced Press-Rite engineers recommend the right press and automatic feed equipment for your job.

10 Models  
2 to 85 TON  
capacities

SALES SERVICE MACHINE TOOL CO.  
2357 University Ave. St. Paul 14, Minnesota

# PRESS-RITE

OPEN BACK • INCLINABLE Power Presses

Used by More—For More Production

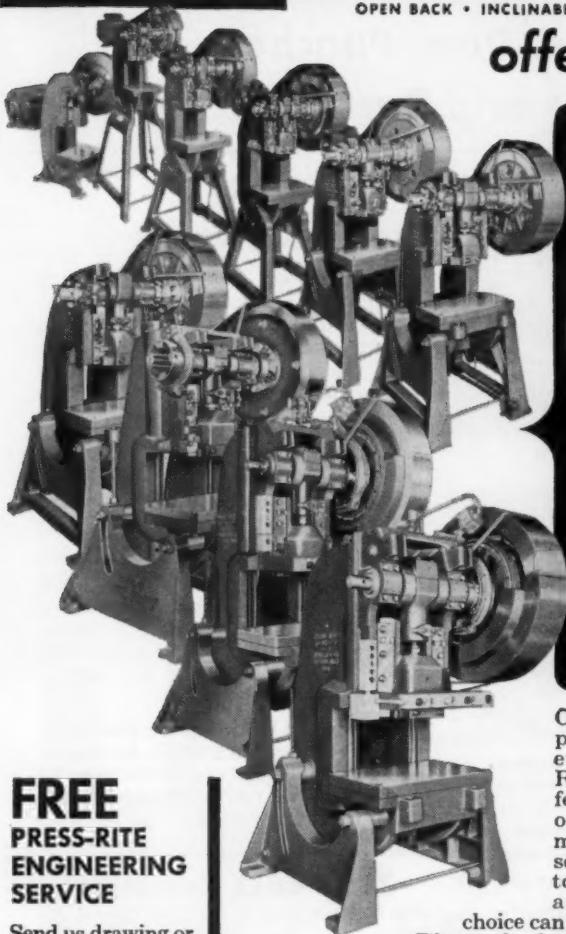
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MACHINE and TOOL BLUE BOOK

# NOW PRESS-RITE

OPEN BACK • INCLINABLE Power Presses

offers you...



**10**  
PROFIT-MAKING  
*Power*  
**PRESSES**  
for  
AUTOMATIC  
or  
MANUAL FEED  
**2 to 85 ton**  
CAPACITY

## FREE PRESS-RITE ENGINEERING SERVICE

Send us drawing or sample. Our engineers will gladly help you select the right press. No obligation of course.

Outstanding profit-making performance is built into every heavy duty Press-Rite. You will find more features to help you turn out accurate stampings and meet tough production schedules. Dies last longer too! Also remember, the automatic feed of your choice can be mounted on your Press-Rite at the factory. Thousands of Press-Rites are being used daily in leading manufacturing plants. One of these 10 models (2, 5, 10, 15, 20, 30, 37, 45, 60, 85 ton) will do your particular job better!

Write today for NEW Press-Rite Catalog showing all models with specifications and low prices.

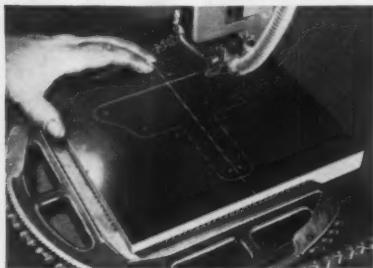
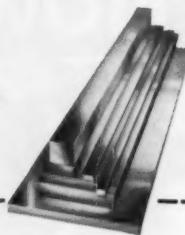
**SALES SERVICE MACHINE TOOL CO.**

2357 University Ave.

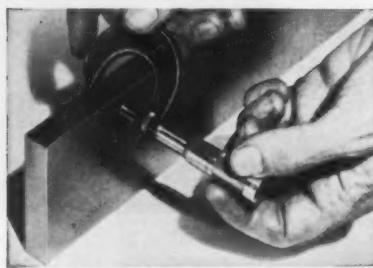
St. Paul 4, Minnesota

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# Up to 50% Greater Life from Tools, Dies, Punches, Gages and Parts!



Ink it—mark it—saw it



No distortion when heat treated.



**NEW!** Spray-on steel  
ink for layout work. Fast,  
easy, economical. Ask  
for literature.

TS-15

... with DoALL

## Air Hardening Steel

**Longer lasting.** A high chromium content (5%) combined with molybdenum and vanadium makes this a longer lasting tool steel giving up to 50% more wear life than oil hardening tool steel.

**Greatest selection of sizes** available for immediate delivery. Less waste; pieces are available to meet almost any size requirement. (Special sizes can also be furnished promptly.)

**Precision ground and accurate.** 25 micro inch RMS surface finish. All sides and edges are ground to these tolerances: thickness—plus or minus .001"; width—plus .005" minus .000"; edges square to face of bar within 10 minutes of a degree.

Call your local DoALL Service Store for swift delivery of DoALL Air Hardening Tool Steel. **Over 1000 standard sizes in air and oil hardening steel to choose from.**

*Literature available, write for it.*

**The DoALL Company**  
254 N. Laurel Ave. Des Plaines, Ill.



Machine Tools • Saw Bands • Measuring Instruments • Cutting Tools In Stock

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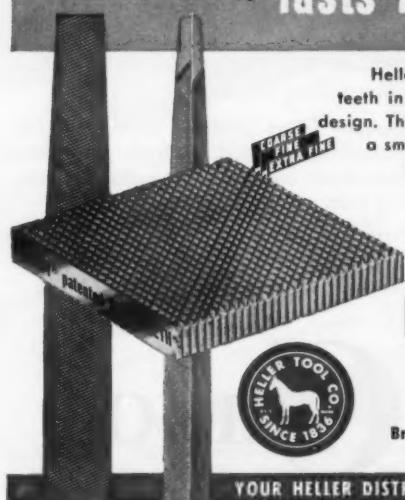
MACHINE and TOOL BLUE BOOK

# NUCUT

patented wavy-teeth mill file

costs no more than an ordinary file

but it lasts longer-cuts faster



Heller NUCUT files combine coarse, fine and extra fine teeth in a planned irregularity, creating the "wavy-teeth" design. The coarse teeth cut deep, clean; the fine teeth leave a smooth, scratch-free finish. This "Wavy-Teeth" design makes the file clear itself, adds longer life. NUCUT "wavy-teeth" files cut faster without scraping or chattering. Ask your distributor for Heller NUCUT files with patented "wavy-teeth."

## HELLER TOOL CO.

A Subsidiary of Simonds Saw and Steel Co.

NEWCOMERSTOWN, OHIO

Branch Offices in New York, Detroit, Chicago, Los Angeles

YOUR HELLER DISTRIBUTOR CAN SUPPLY ALL YOUR FILE NEEDS

Encircle No. 231 on Card, Opposite Page 65

November, 1955

39

new  
**Carlton**  
pre-selector



**One of 3 different speed-feed controls  
for Carlton radial drills**

The new Carlton-Leber speed-feed pre-selector system speeds up drilling by permitting operator to set speed and feed for the next operation while the machine is still under cut. With this productive new device, the time lost heretofore in setting speeds and feeds is now used for almost continuous drilling. Now you stop the spindle only for changing cutting tools.

Additional time is saved by instantaneous gear shifting made possible by mechanically oscillating the change gears which assures quiet gear mesh.

**Programming**—another Carlton-Leber system used in connection with the pre-selector. Pre-selects speeds and feeds for

as many as 20 or 30 operations in an entire drilling program.

**Manual Gear Shift:** 2 shift levers for controlling speeds, 2 for feeds . . . select speed-feed combinations manually, one at a time.

Write for descriptive bulletin giving complete information. The Carlton Machine Tool Co., Cincinnati 25, Ohio, U.S.A.

**Carlton**  
*horizontal and radial drills*

Encircle No. 232 on Card, Opposite Page 65

MACHINE and TOOL BLUE BOOK

# "excellent finish"



## **SURVEY**

### **DESCRIPTION OF WORK**

Surface grinding tool bits  
to size on production basis.

### **SEGMENTS**

Simonds Abrasive Company NA 36-G9-B3

### **PERFORMANCE**

Excellent finish, plus long segment life.  
Performance unequalled by other  
makes of segments over many years.

**SIMONDS**  
**ABRASIVE CO.**

## **abrasive segments**

Send for catalog bulletin "Abrasive Segments" form E5A-100.

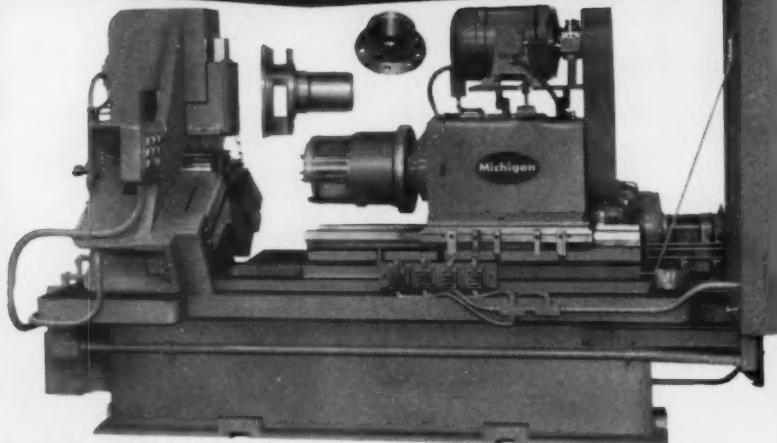
Superior results plus long productive use! This is the constantly recurring theme of surveys covering jobs on which Simonds Segments are used. You'll find them equally productive and durable on your jobs.

**SIMONDS ABRASIVE COMPANY • PHILADELPHIA 37, PA.**

Branch Warehouses: Boston, Detroit, Chicago, Portland, San Francisco • Distributors in Principal Cities  
Division of Simonds Saw and Steel Co., Fitchburg, Mass. • Other Simonds Companies: Simonds Steel Mills, Lockport, N. Y.  
Heller Tool Company, Hawcomerstown, O., Simonds Canada Saw Co., Ltd., Montreal, Quebec,  
Lion Grinding Wheels Div., Brockville, Ont. and Simonds Canada Abrasive Co., Ltd., Arvida, Quebec



# NEW HIGH PRODUCTION TYPE GUN DRILLING MACHINE



## MACHINE SHOWN PRODUCES 400 PARTS PER 8 HOUR SHIFT

It drills 6 holes (.5102-.5107 diameter); to size within .0005, and to location within .001, AND, NO FURTHER OPERATIONS ARE REQUIRED. The existing Drill & Ream operations will produce only 75 parts, in an 8 hour shift.

## IT'S BUILT TO HANDLE 3 TOTALLY DIFFERENT PARTS

Diameter of largest part handled is 12"—and, of the smallest part, 6". It can be converted, to handle one part or another, easily, in 3 minutes. It's possible to eliminate up to 6 machines, and save time and manpower.

## AND, IT WILL HANDLE DOUBLE-FLANGE PARTS READILY

On double-flange parts, with an opening between flanges—up to 2"—high speed production is maintained by a jump feed, to cut down cycle time.

## BUILT TO J.I.C. HYDRAULIC AND ELECTRICAL STANDARDS

Automatic lubrication throughout. Hydraulically operated bushing positioning slides. High pressure coolant system provides rapid dispersion of chips from Gun Drill tips as well as lubricating drills. Designed, engineered and proved in actual plant operation.

We invite your inquiries regarding our full line of tapping units, and index tables, manual and automatic. Write for Catalog and Engineering Data Sheets.

# Michigan

**DRILL HEAD CO.** Detroit 34, Michigan

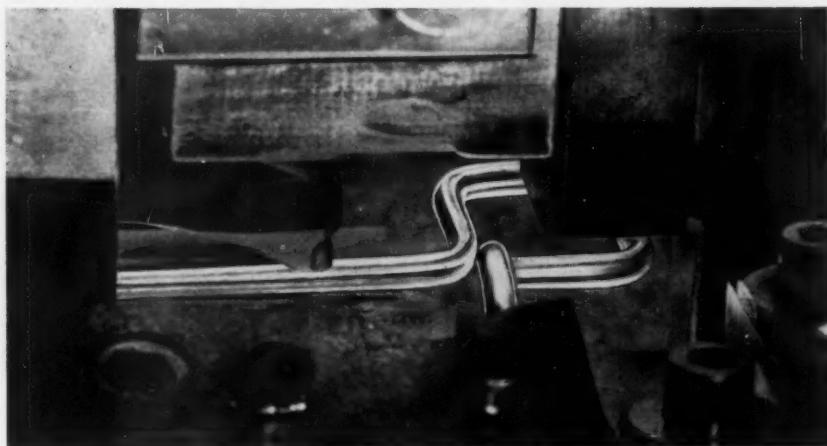
engineers and manufacturers of production machines and drilling equipment

Encircle No. 234 on Card, Opposite Page 65

MACHINE and TOOL BLUE BOOK

# NILSON 4-SLIDES PAY OFF 4 WAYS

- BIG PROFITS • BIG PRODUCTION
- BIG SAVINGS • BIG GAIN IN ACCURACY



Forming Operation: Meter Shunts of  $\frac{3}{16}$ " Wire Stock

#### WHY NILSON IS TOPS FOR 4-SLIDES:

Nilson 4-Slides are built for rugged duty

Form both ribbon metal and wire stock

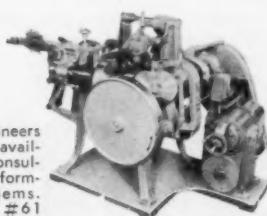
Press capacities 8 to 75 tons, wire diameter to  $\frac{1}{2}$ "

16 Models Available, Including Combinations of Horizontal Press and 4-Slide

#### YOU PROFIT BY:

Automatic Operation • Increased Production

• No Secondary Handling • Improved Products • Fewer Rejects • Lowest Initial Cost



Nilson engineers are always available for consultation on forming problems. Bulletin #61 sent on request.

Nilson's 3 tilt and 3 stationary reels handle wire or ribbon stock coils up to 500 pounds.



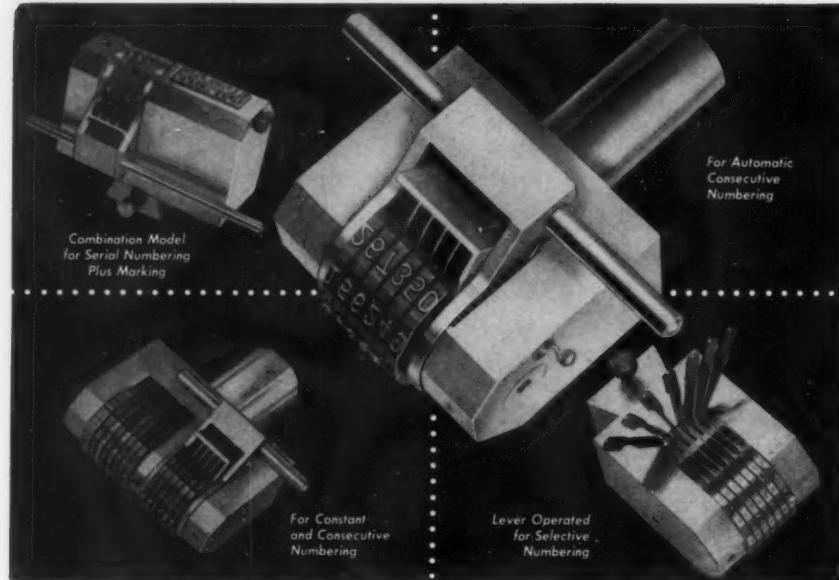
1511 RAILROAD AVENUE, BRIDGEPORT 5, CONN.

Automatic Chain Making Machines • Staple Forming Machines • Wire and Stock Reels • Wire Straightening Equipment • Slide Feeds for Presses • Wire and Ribbon Stock Forming Machines

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November, 1955

43



## NOBLEWEST Precision Numbering Heads

1 2 3 4 5 6

1 2 3 4 5 7

1 2 3 4 5 8

1 2 3 4 5 9

1 2 3 4 6 0

1 2 3 4 6 1

Fast, accurate and dependable, Noblewest Numbering Heads are preferred by the leaders in industry. They have unlimited applications for *constant, selective and consecutive* numbering. Designed for use in either marking presses or Noblewest Roll Marking Machines — wherever permanent numbering is required. Available in a wide variety of automatic, non-automatic and lever operated models with number sizes from  $1/40"$  to  $1/2"$ . Special numbering heads are made to any requirements including embossing heads and numbering heads combined with marking dies. Write to Noble & Westbrook Manufacturing Company, 9 Westbrook Street, East Hartford 8, Conn.

MARK IT BEST WITH



# NOBLEWEST

ORIGINATORS OF THE ROLL MARKING PROCESS

Encircle No. 236 on Card, Opposite Page 65

MACHINE and TOOL BLUE BOOK

# NEW WILLIAMS LOCKING ADJUSTABLE WRENCH

with Features you  
Have Always  
Wanted in an  
Adjustable Wrench

- No Obstructions
- Structurally Sound
- Positive Lock
- Rapid Adjustment
- One Hand Operation
- No Fumbling
- Drop-Forged from Selected Alloy steel and Chrome Plated

**AVAILABLE  
AT NO EXTRA COST**



## IN FOUR MOST POPULAR SIZES

No.	Size	Capacity	List Price
6L	6"	3/4	\$2.06
8L	8"	1 1/16	\$2.45
10L	10"	1 1/8	\$3.10
12L	12"	1 1/16	\$4.50

# WILLIAMS

## INDUSTRIAL TOOLS

*"The Broadest Line of Its Kind"*

WRITE for descriptive folder No. A-465. Also ask for Catalog 302 showing the latest patterns and sizes in Williams broad line of industrial tools.



you'll get  
SERVICE ON  
THE DOUBLE  
from your  
DISTRIBUTOR'S  
SALESMAN  
He'll give  
you quickest  
delivery at  
lowest cost!

**J. H. WILLIAMS & CO., 428 Vulcan Street, Buffalo 7, N. Y.**

Encircle No. 237 on Card, Opposite Page 65

November, 1955

*It's New!*



**ACME**  
Multiple Application  
**HYDRAULIC**  
**PRESS**

**It's Simple!**  
**a youngster can operate it!**

Here's a machine, which, owing to the fact that it can be used for so many purposes, will prove valuable and profitable in your plant. Just another instance where Acme is constantly alert in meeting present-day production requirements.

**Versatile!**

**use it for:**

STAKING	BROACHING
FORCING	ASSEMBLING
CRIMPING	PUNCHING
TRIMMING	FORMING
BENDING	MOLDING
BALLIZING	STRAIGHTENING

**Write for Complete Details**

**ACME PRESS DIVISION**  
**ACME BROACH CORP. • MILAN, MICHIGAN**

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MACHINE and TOOL BLUE BOOK

INCREASES  
PRODUCTION...

LOWERS COSTS...

PAYS FOR ITSELF  
QUICKLY...

The ROUSE HAND MILLER is a widely used, inexpensive, high speed, ball bearing, motor driven machine for handling light cuts in brass, aluminum, steel, plastics, and other materials—fast, accurately, and at very low cost. Only \$110.00\*

Fixtures (illustrated) extra.

Motor equipment:—1/4 H.P. 110 Volt AC 60 cycle, single phase, swivel motor mount and light—\$36.00\*

\*All prices FOB Chicago.



- ★ MILLS SMALL PARTS MUCH FASTER.
- ★ DRASTICALLY CUTS YOUR INVESTMENT IN EQUIPMENT. Replaces expensive production machinery—or releases it for other jobs.
- ★ INEXPERIENCED HELP CAN OPERATE IT. Safe, simple, fool-proof operation.
- ★ NO MORE COSTLY SET-UP TIME. \$110.00\* price so low that it pays to keep one or more Hand Millers always set-up for special operations.
- ★ YOU GET A BETTER PRODUCT—the result of ABSOLUTE ACCURACY.
- ★ A LOSS BECOMES A PROFIT when marginal pieces are finished on the Hand Miller instead of on high cost equipment.
- ★ VERY LOW MAINTENANCE.
- ★ USED REGULARLY IN 1163 MANUFACTURING PLANTS (some of which use as many as 30 machines)—yet on the market a scant few years.
- ★ UNIQUE—VERSATILE. Nothing else like it. One or several machines can be the answer to some of your production problems.

Write today  
for further  
information.

**H. B. ROUSE & COMPANY**

2214 N. WAYNE AVE., CHICAGO 14  
50 YEARS OF SERVICE TO INDUSTRY

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THE

SELLERS 6-GA

DRILL GRINDER



Grinds faster and handles  
easier. And it can also be

arranged to grind carbide drills.

Capacity: 5/16" to 3" drills

**CONSOLIDATED MACHINE TOOL CO.**



**ROCHESTER, NEW YORK**



A DIVISION OF FARREL-BIRMINGHAM CO., INC.

**SHELDON**  
CHICAGO

**U.S.A.**

**NEW** *Sebastian* 13"

**A-5 GEARED HEAD**

**PRECISION LATHE**



Speed changes easily made by revolving speed dial on headstock



Heavy, multiple Splined Spindle with "Zero Precision" tapered roller bearings



Quick change Gear box provides 60 different threads or feeds — has built-in lead screw reverse



Massive 1-piece, double walled apron with gears running in oil has "1-shot" pressure lubrication system for carriage and ways



Cam action tailstock clamp permits rapid release and instant locking of tailstock



Available in 5 ft., 6 ft. and 8 ft. bed lengths. Also, **SHELDON - Sebastian 15", No. B-5 Geared Head precision lathe.**

This is a completely new Sebastian Lathe designed and built by Sheldon . . . a rugged work horse with extra power, toolroom accuracy and all the modern features that make for money-saving production . . . with all controls centrally grouped in easy reach for safe efficient operation.

Modern, heavy cast-iron pedestal (included in base price of lathe) completely encloses motor and drive . . . with storage space in tailstock leg for tools and chucks.

*Run this new Sebastian lathe. Test its performance. You will appreciate the powerful cuts that this lathe can take. Write for circulars on 13" and 15" Sebastian lathes and name of nearest dealer where you can see and operate these outstanding lathes.*

**SHELDON MACHINE CO., INC.**

4202 N. Knox Ave., Chicago 41, Illinois

Encircle No. 241 on Card, Opposite Page 65

MACHINE and TOOL BLUE BOOK

THE **CORRECT** BLANCHARD WHEEL  
GETS YOUR NOSE OFF THE GRINDSTONE

... WITH **BEST SURFACE  
GRINDING RESULTS!**



**BLANCHARD SURFACE GRINDERS** give you peak production and economy when maintenance is performed on schedule, and when you use the best wheel for each job.

For more than 25 years, Blanchard has been making wheels that do their jobs in less time, with less trouble and cost . . . whether the work is tough as copper or fragile as glass . . . whether it requires heavy roughing cuts or clean-up cuts with flatness of .000005" to .000010" and finish of 1 to 3 micro-inches.

Our quarter century of experience has proven that Blanchard grinders perform best with Blanchard wheels...on every job!

**SEND**  
FOR OUR NEW,  
**FREE FOLDER**  
on Blanchard cylinder, sectorized and segment wheels —  
in silicate, resinoid and vitrified bonds.

**PUT IT ON THE**



**THE BLANCHARD MACHINE CO.**  
64 STATE STREET • CAMBRIDGE 39, MASS., U. S. A.

Gentlemen:

Please send new *Blanchard Wheel and Segment folder*.

NAME \_\_\_\_\_

TITLE \_\_\_\_\_

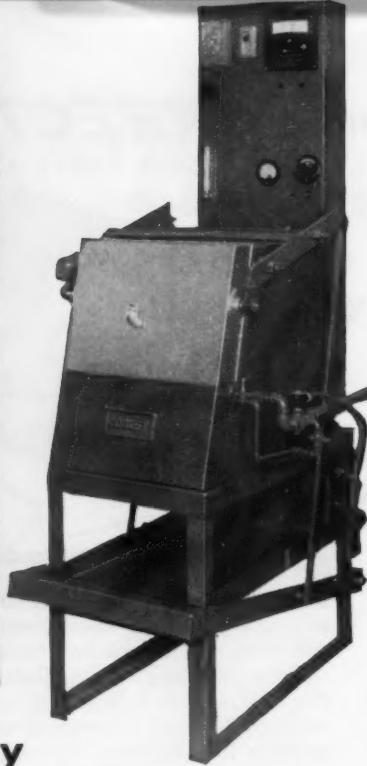
FIRM \_\_\_\_\_

STREET \_\_\_\_\_

CITY \_\_\_\_\_ ZONE \_\_\_\_\_ STATE \_\_\_\_\_

Encircle No. 242 on Card, Opposite Page 65

the new  
*Cooley*  
BATCH TYPE  
controlled  
atmosphere  
heat treating  
furnace



—designed especially  
for tool rooms and small production

This new Cooley GA-3 electric is the first small furnace to provide atmosphere protection with a reasonable investment and low operating costs. The atmosphere is generated by cracking alcohol and water of proportions predetermined to suit the application. Steel may be clean hardened without decarburization, or may be carburized.

As a package unit, the Cooley GA-3

includes a fully wired temperature control panel and atmosphere generating unit. A sealed alloy retort with tightly closed door, automatic gas curtain and foot operated door mechanism are other features that help assure dependable, economical operation—with little adjustment required. Write or wire for catalog—investigate the possibility of this new furnace for your work.

**COOLEY ELECTRIC MANUFACTURING CORPORATION**  
36 SHELBY STREET • INDIANAPOLIS 7, INDIANA

*Cooley*

**HEAT  
TREATING  
FURNACES**

Encircle No. 243 on Card, Opposite Page 65

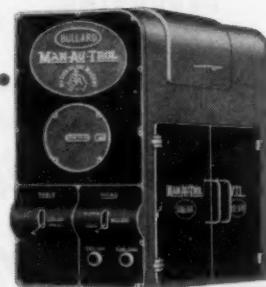
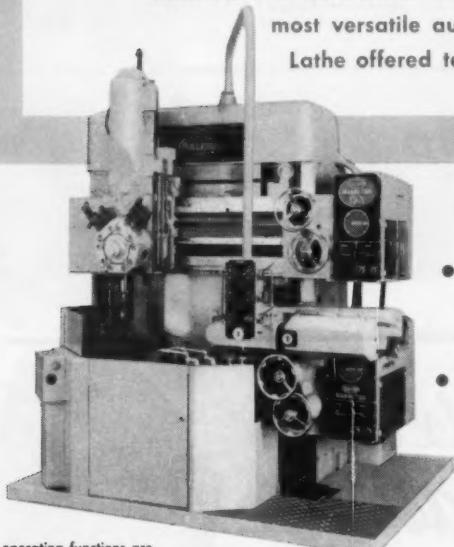
*don't*  
**BUY BULLARD**  
*unless* **YOU WANT THE BEST!**

Yes, Bullard Cut Master, Model 75 with

Man-Au-Trol Conversion Unit is the best . . .

most versatile automatic Vertical Turret

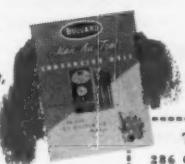
Lathe offered to industry . . . .



All operating functions are automatically initiated and controlled by one function control drum and two detector drums in Man-Au-Trol: Table Speeds (20 Available), Feeds (16 Available). Head Travel in feed or traverse, right or left, up or down or 45° in any quadrant and Turret Indexing.

Since the function control drum can be pre-set for a given job in advance, the machine down time for job change-over is reduced to a minimum.

The Man-Au-Trol Conversion Unit can be applied to any or all heads of Cut Master, Model 75 right in your plant.



Your Bullard Sales Engineer will be glad to explain the many other advantages offered by Man-Au-Trol — your best buy in an automatic vertical turret lathe — call him or write for our new catalog.

THE BULLARD COMPANY  
286 Canfield Avenue • Bridgeport 2, Connecticut

Please send me a copy of the  
NEW MAN-AU-TROL, MODEL 75 CATALOG

NAME \_\_\_\_\_

COMPANY \_\_\_\_\_ POSITION \_\_\_\_\_

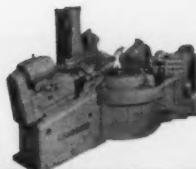
ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_ ZONE \_\_\_\_\_ STATE \_\_\_\_\_

Encircle No. 244 on Card, Opposite Page 65

**MODERN** builds  
MACHINING  
METHODS

Special Machines  
like this 5-way machine for  
drilling and tapping jet  
engine compressor housings.



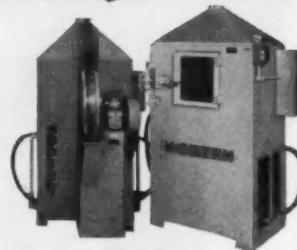
**MODERN** builds  
for  
POROSITY  
CHECKING

Pressure Testing  
equipment like these models  
which check exhaust mani-  
folds for leaks. They also  
locate the leak for salvage.



**MODERN** builds  
for  
DEBURRING

Maizo Blast  
deburring machines like  
these for the production bur-  
ring of "soft" metal parts.



and only  
**MODERN** builds the  
*Burr-Masters*  
for  
GEAR DEBURRING AND CHAMFERING

Shown here is the model BME-14 Universal Burr-Master. It  
chamfers and deburrs the teeth of spur and helical gears as  
well as external straight or involute form splines. Universal  
Burr-Masters are available to handle pitch diameters from  
 $\frac{5}{8}''$  to 24".

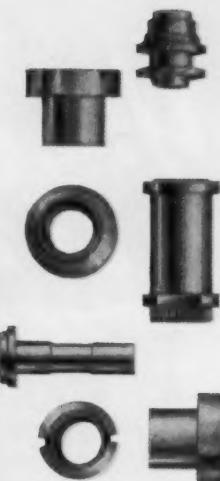


**MODERN**  
Industrial Engineering Co.

14230 BIRWOOD AVE., DETROIT 38, MICHIGAN

# "Economical Buying of Screw Machine Products Now Calls for Greater Care in Specifications,"

says Leonard Schaffer, President, Mechanical Art Works, Inc., Newark, New Jersey



A few typical fine-finish close tolerance screw machine products currently produced from ANACONDA Rods at the Mechanical Art Works.

## A few of Mr. Schaffer's suggestions to buyers of screw machine products for keeping costs down.

Wherever possible, the largest diameter of the piece should correspond to a standard stock rod diameter.

Avoid fancy shapes calling for expensive forming tools.

Use hole diameters obtainable with standard tools.

Allow commercial tolerances if possible, otherwise specify tolerances no closer than necessary.

Specify Standard National Coarse or National Fine Threads wherever possible.

On external threads, cutting full threads close to a shoulder is expensive—and may be unnecessary.

Topping blind holes close to the bottom is difficult and costly.

Specify free cutting material unless special physical properties are required, then select the best machining material containing those properties.

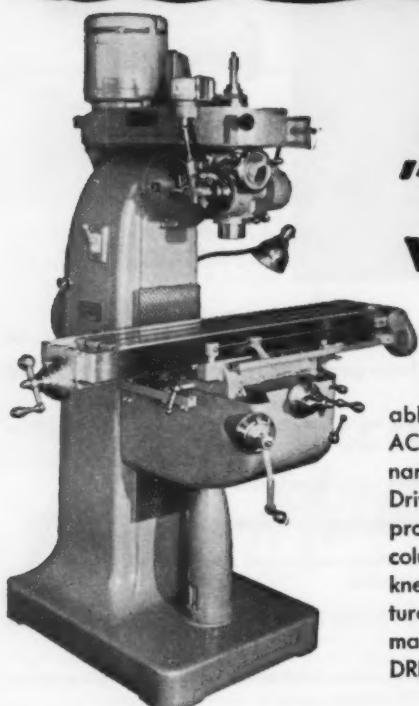
## ANACONDA<sup>®</sup> RODS FOR SCREW MACHINE PRODUCTS

Encircle No. 246 on Card, Opposite Page 65

November, 1955

55

Yes, "SUPER"  
is the word...



for the  
**POWERFUL,**  
**NEW INDEX**  
**"SUPER 55"**  
**VERTICAL MILL**

Note its advantages:  $1\frac{1}{2}$  Horsepower Head or optional 2 Horsepower with continuous duty motor gives 50% or MORE CAPACITY than previously available. A LOT MORE RIGIDITY—A LOT MORE ACCURACY. Increased horsepower and dynamically balanced Cast Iron Pulleys and Drive System make possible the improved production capacity. More weight in the column, heavier ribbed column, heavier knee, heavier saddle. Other improved features. Choose the new SUPER 55, the best machine for your BORING, MILLING and DRILLING operations. Write for literature.

OTHER MODELS AVAILABLE

**Index Machine Co.**

540 N. MECHANIC STREET

JACKSON, MICHIGAN

Encircle No. 247 on Card, Opposite Page 65

MACHINE and TOOL BLUE BOOK



## *There's a Standard **PUTNAM** **END MILL** for Your Job!*

Universal Application of Putnam End Mills (there are over 1200 standard sizes and types) permits users to select a standard end mill specifically designed for each job. Many standard Putnam End Mills are of a type considered "specials" by other manufacturers. Also, a wide range of sizes are available in every standard type of end mill to provide complete application coverage.

From smallest to largest sizes — from fine intricate machining to rugged milling operations there is probably a standard Putnam End Mill that will mill your job more efficiently. However, Putnam will also produce "special" end mills to your specs for those extra-special applications.



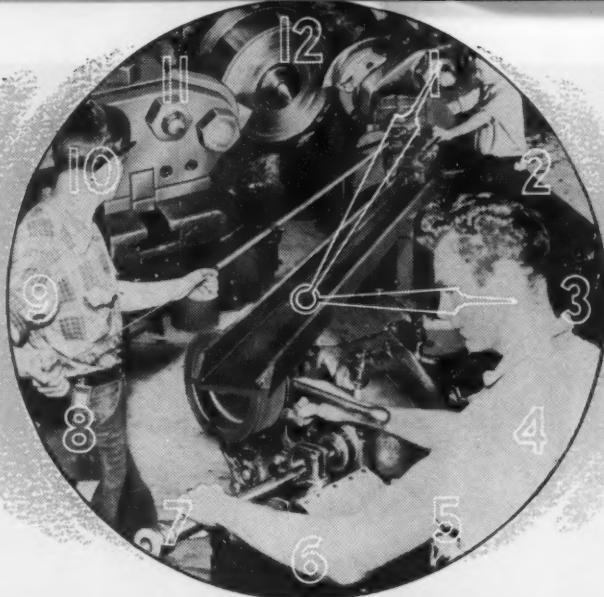
**PUTNAM**

TOOL COMPANY  
2981 CHARLEVOIX AVENUE • DETROIT 7, MICHIGAN

Encircle No. 248 on Card, Opposite Page 65

November, 1955

57



## Why let the 4<sup>th</sup> DIMENSION limit your screw machine tool output?

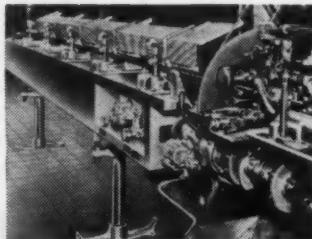
A trip to the washroom or tool crib, a halt for feed finger repair, a spinning empty chuck — these interruptions to the steady flow of production can never be made up . . . for TIME, the 4<sup>th</sup> Dimension, waits for neither man nor machine.

Over 150 firms have learned how to use every minute of every shift for continuous, 4<sup>th</sup> Dimension production. Here's how . . .

### Lipe A.M.L. Bar Feed Eliminates Time Losses, Increases Output 30% or More

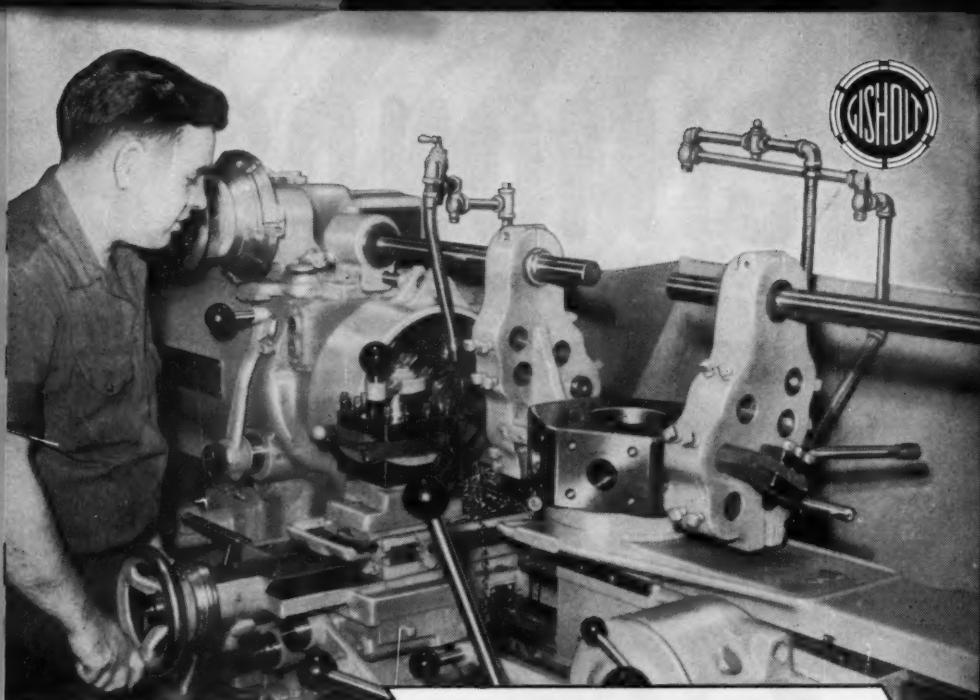
Feeds an 8-hour supply of stock to any machine equipped with a fixed stop. No feed fingers to break down or scratch polished stock. Cuts cycle time — feeds any length in one feed-out. Eliminates "cutting air"; idle operation.

**FREE:** 24-page "4<sup>th</sup> Dimension" booklet shows how to boost your machine tool output 30% or more. Send for yours today!



*Lipe* - ROLLWAY  
CORPORATION  
SYRACUSE 1, N.Y.

Manufacturers of Automotive Clutches and Machine Tools



Above: Bed and Headstock are cast integrally to form an extremely heavy unit and to provide the rigid foundation for all types of work.

Below: Block type ways are straddle keyed to the bed and ground in perfect alignment with the spindle. All working surfaces are hardened to 64-66 Rockwell "C".



## ACCURACY that doesn't "wear off"

Here are two good reasons why you can count on the accuracy of Gisholt Turret Lathes—now and years from now.

One-piece bed and headstock, cast as a heavy, rigid unit, reduce distortion and vibration to a minimum. Headstock is jig-bored to insure—and maintain—perfect alignment of spindle and drive shafts, with ample metal to provide the most solid support possible.

Hardened steel ways are augmented by hardened steel strips secured to the ram saddle, as well as hardened steel gibs and clamps, making an assembly that is virtually wear-proof. Its accuracy is further preserved by force lubrication.

These advantages are yours for the long life of any Gisholt Turret Lathe. Ask for complete details.

THE GISHOLT ROUND TABLE represents the collective experience of specialists in the machining, surface-finishing and balancing of round and partly round parts. Your problems are welcomed here.

# GISHOLT

MACHINE COMPANY

Madison 10, Wisconsin



TURRET LATHES • AUTOMATIC LATHES • SUPERFINISHERS • BALANCERS • SPECIAL MACHINES

NOW

# SIMONDS

OFFERS A

## Complete Line of

### "RED TANG" FILES

AMERICAN PATTERN • "AMERICAN-SWISS" SWISS PATTERN  
"VIXEN" MILLED CURVED TOOTH • ROTARY FILES and BURRS

"Red Tang"®  
AMERICAN  
PATTERN FILES  
and RASPS

You can now get ANY TYPE FILE YOU NEED from one complete line — SIMONDS! The famous "Red Tang" Line now includes ALL TYPES OF FILES for every purpose: machine shop, saw filing, die making, precision craftsmen, automotive, aircraft, pattern makers, foundries, railroad and shipyards, garages and for special applications.

All are Grade A only . . . backed by SIMONDS reputation for outstanding quality, dependability and service. Call your Simonds Distributor now for ALL your file needs. Ask for "Red Tang" . . . and be sure of the best!



American-Swiss  
SWISS  
PATTERN  
FILES

ROTARY  
FILES

Hand Cut • Ground-from-Solid • Carbide



VIXEN<sup>®</sup>  
MILLED  
CURVED-TOOTH  
FILES

For Fast Service  
from  
Complete Stocks

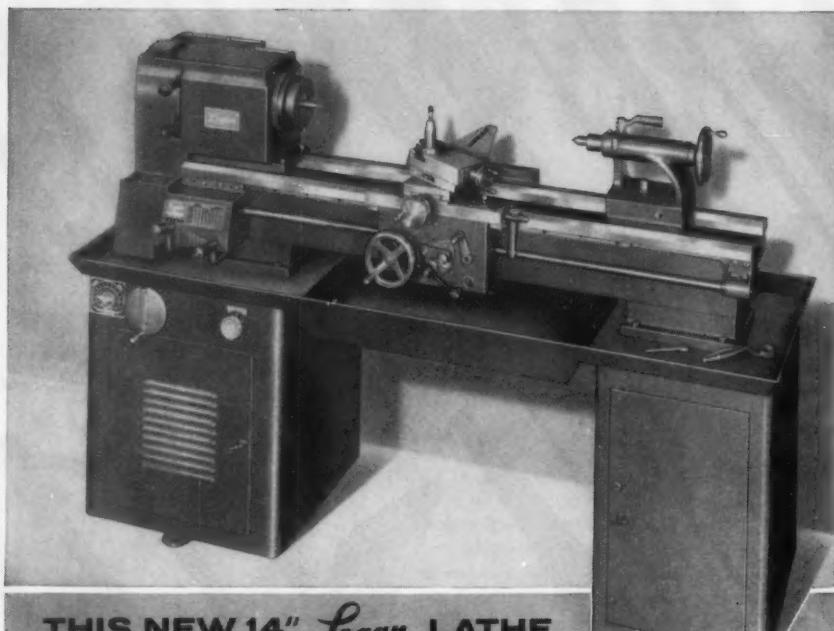


Call your  
**SIMONDS**  
INDUSTRIAL SUPPLY  
DISTRIBUTOR

**SIMONDS**  
SAW AND STEEL CO.

FITCHBURG, MASS.

Factory Branches in Boston, Chicago, San Francisco and Portland, Oregon  
Canadian Factory in Montreal, Que., Simonds Division: Simonds Steel Mill, Lockport, N. Y.  
Heller Tool Co., Newcomerstown, Ohio, Simonds Abrasives Co., Phila., Pa., and Arville, Que., Canada



THIS NEW 14" *Logan* LATHE  
**PERFORMS...**  
AND THE RESULTS PROVE ITS SUPERIORITY

The more jobs you watch this rugged new Logan "6560" perform, the more impressive it looks. On the heaviest cuts, or at maximum speed, it turns the work *smoothly*, quietly, with precision results. Superior performance is designed, engineered and built into it.

The Variable Speed Drive provides instant spindle speed correction. The oversize spindle, with  $1\frac{1}{8}$ " bore, turns on a ball bearing mounting that needs no adjustment within the full range of 38 to 1200

rpm. The bed is a wide, deep special alloy casting, extra heavy and resistant to both internal and external stresses. The two V-ways and two flat ways are precision ground. Extra strength and weight throughout, plus dynamic balancing of the complete lathe practically eliminates vibration. Moderate price and low cost operation make the "6560" outstanding in economy as well as in precision performance. Write for Bulletin 14-L, giving a full description.

**SPECIFICATIONS  
AND FEATURES**

14" swing over bed  
9" swing over saddle  
1 $\frac{1}{8}$ " spindle hole  
1" collet capacity  
40" between centers

Variable Speed Drive  
Ball Bearing Spindle  
38 to 1200 rpm  
Two-V-way, Two-flat  
way, Precision  
Ground Bed  
Precision Carriage

LOOK TO LOGAN FOR BETTER LATHES AND SHAPERS

**LOGAN ENGINEERING CO.**

Lawrence and Lamon Ave., Chicago 30, Ill.  
Encircle No. 252 on Card, Opposite Page 65

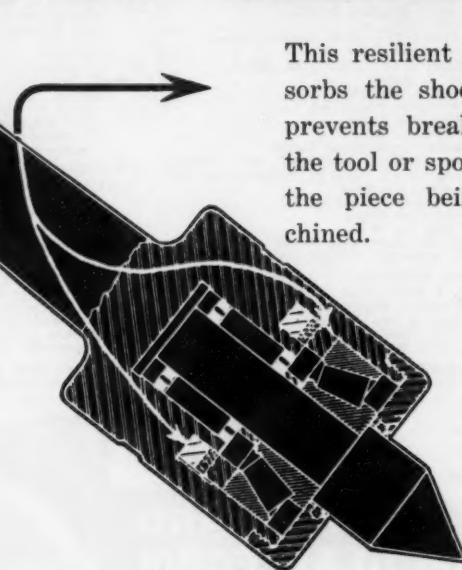
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A test in your plant will quickly prove the superiority of this —

# CENTER OF CENTERS

Special Centers can be furnished to meet unusual conditions.

*Glenzer*



## PRECISION FRICTION-LESS LIVE CENTERS are furnished in

- Taper Shank
- Slip-in
- Slip-over
- Spindle types

**Utility  
Tools**

Write for index Circular D

THE J. C. **GLENZER** CO. Inc.

1546 E. NINE MILE ROAD, DETROIT 20, MICH.

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November, 1955

63

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**SAME DAY SHIPMENT**

- # 00 B&S through 1" wide
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- # 2 B&S through 1 1/2" wide

plus Davenport Form Tool, Sizing and Roll Blanks through 1" wide.

All by 16ths in High Speed Steel.

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21 BROWN STREET, WATERBURY, CONN.

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Write for complete price list and name of local representative. Complete line of Standard Circular Form Tools available—ask for catalog.

Price and delivery on request for Blanks for other make machines or Blanks of High Cobalt Steel.

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NOVEMBER, 1955

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TO YOUR



**DISTRIBUTOR**

FOR THE FINEST IN  
CUTTING TOOLS AND GAGES



Made by **THREADWELL**, Greenfield, Mass.

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November, 1955

65

# NEW!

FILTER...REGULATE...LUBRICATE with this

## Schrader® Lub-air-ator

Finest sintered filtering automatic — completely rustproof — various sizes.

Regulates line pressure down to 5 to 125 psi by turning handle. Various sizes — flow capacities.

Schrader

Body — Bonnet and interior parts are corrosion-resistant and replaceable.

Automatic Lubrication with sight feed. Adjust oil flow while you watch.

Sintered Bronze Filter. Minimum pressure drop. Removable filter easily cleaned without disturbing piping.

Highest Capacity — Finest Response — Longest Life. Gauge mountable on either side.

Sturdy Transparent Bowl permits constant visual policing.

Whirling Action throws water and foreign materials to sides and bottom of bowl.

Drain Cock makes it easy to blow out foreign material.

Wide operating pressure range. Vibrationproof — holds adjustment.

Sturdy Transparent Bowl— $\frac{1}{2}$  pint capacity. Oil level always evident. Refill without shutting off air.

Handy Drain Cock. Sediment easily removed.

Easily maintained. No moving parts—can be serviced without disturbing pipe connections.

Now! An all-in-one installation! The Schrader LUB-AIR-ATOR. This new, quality unit is designed to do these three important jobs: *filter* clean the air as it moves through system — *regulate* air to proper pressure requirements — *lubricate* moving parts in the correct amount to minimize wear and friction. End result: valuable air tools give longer trouble-free service.

For a fully illustrated specification sheet write us! Act now! Address: A. SCHRADER'S SON, Division of Scovill Manufacturing Company, Incorporated, 466 Vanderbilt Avenue, Brooklyn, New York.



## Schrader®

ESTABLISHED IN 1844

LEADERS IN AIR CONTROL SINCE 1844

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# This high-speed flat belt lasts up to 5 times longer

than woven or braided belts

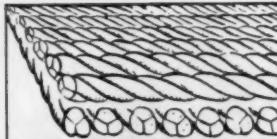


Put a Gates Speed-Flex Belt on one of your machines. If Speed-Flex does not outperform any other belt you have used on that machine, *the cost of the Gates Belt will be promptly refunded.*

**The revolutionary construction of Gates Speed-Flex Belts increases belt life; cuts belt costs; reduces downtime.**



These drawings  
show why:



This drawing represents the *tightly interlaced* cords of woven and braided belts. Flexing of the belt at high speeds sets up internal friction which causes braided or woven belts to saw themselves to pieces.

Gates Speed-Flex has a layer of strong pulling cords, which carry the load, bonded to a layer of cross cords that act as tread. Oil-resistant rubber separates each cord. *NO sawing action of cord against cord.*

Prove to yourself that Gates construction gives *longer life*. Call your Gates jobber, or write to The Gates Rubber Co., Sales Division, Inc., Denver, Colorado.



TPA 58

The Mark of Specialized Research

## **Speed-Flex Belts**

for high-speed equipment requiring flat belts

Encircle No. 267 on Card, Opposite Page 65



# SOUTH BEND 13" LATHES



**for accurate,  
low-cost machining**

South Bend 13" Lathes are popular wherever precision parts are machined. Costs drop as their efficiency keeps production flowing even on the "headache" jobs. Operators prefer them for their simplicity and effortless handling. Set-ups and change-overs are made quickly and easily so that down-time is held to a minimum.

Find out how these quality-built lathes can bring you better machining at lower costs. Your South Bend distributor will be glad to show you how they can help your machining problems. Or, mail coupon for catalog. Base price \$1460—**TIME PAYMENT TERMS:** Only 3 1/4% annual interest on original unpaid balance.

## SPECIFICATIONS

**Swing — 13".**

**Distance between centers — 28 1/4", 40 1/4",  
52 1/4".**

**Collet capacity — 1" max.**

**Spindle bore — 1 1/8".**

**Spindle speeds — (8) 40 to 940 r.p.m.,  
approx.**

**Longitudinal, cross and thread cutting  
feeds — 48 each.**

Compared with our costs  
**OUR PRICES ARE LOWER**  
than they were back in 1941

WAGES UP | MATERIALS UP | PRICES UP OVER



Prices are closely tied to costs. Costs are still rising. But more before increased costs necessitate higher prices.

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Name \_\_\_\_\_ Street \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_

Building Better Tools Since 1906 • **SOUTH BEND LATHE** • South Bend 22, Indiana

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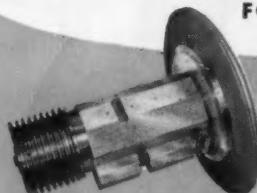
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There's an EX-CELL-O

# Precision Spindle

BUILT ESPECIALLY  
FOR YOUR WORK



23 hp heavy duty precision spindle  
with 24" grinding wheel.



Totally enclosed inbuilt motor  
surface grinder spindle.



Precision inbuilt  
motor spindle for  
cutter grinder.



Single-body, belt-  
driven internal  
grinding spindle.

25,000 rpm high frequency  
inbuilt motor spindle.



Heavy duty motorized  
precision spindle  
available up to 20 hp.



EX-CELL-O High-frequency Spindle, rated at  
40,000 rpm, grinds small holes in bushings.



MANUFACTURERS OF PRECISION MACHINE TOOLS • GRINDING  
SPINDLES • CUTTING TOOLS • RAILROAD PINS AND BUSHINGS  
DRILL JIG BUSHINGS • AIRCRAFT AND MISCELLANEOUS PRODUC-  
TION PARTS • DIAJET EQUIPMENT

35-21

For production grinding to precision limits "just any spindle" won't do. It must be carefully selected to suit the work. From Ex-Cell-O's widely-varied line of precision spindles you can select a standard model, or we'll make one special to your requirements. These spindles have long been the original equipment choice of leading manufacturers.

Features of the line include:

Rigidity  
Permanent adjustment  
No vibration, no chatter  
Precision ball bearings preloaded for  
predetermined speeds

Phone your Ex-Cell-O representative, or phone or  
write Ex-Cell-O in Detroit, for CATALOG LISTING  
HUNDREDS OF STANDARD GRINDING SPINDLES

**EX-CELL-O**  
CORPORATION  
DETROIT 32, MICHIGAN

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November, 1955

69

# extra!

## ALL ABOUT THE LATEST BENDING METHODS

Let Pedrick show you how the latest methods of bending pipe, tube and structural metal—on a job or production basis—can save you money.

For full information on Pedrick Production Benders, write PEDRICK TOOL AND MACHINE Co., 3640 N. Lawrence St., Phila. 40, Pa. Dept. 3.



FREE "PEDRICK LINE" BULLETIN.  
WRITE TODAY.

**PEDRICK**

production benders

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MACHINE and TOOL BLUE BOOK

*You too...*

*will benefit  
by using*

**ATRAX  
CARBIDE  
TOOLS**



Thousands of users everywhere continue to specify ATRAX Precision Ground-from-the-Solid Carbide Tools.

Whether your needs are for Carbide Burrs, Drills, Reamers, Tool Bits, End Mills, Special Cutters—either Stock Items or Specials—you'll be amazed at the superior cutting edges, longer life, better production results with ATRAX.

*It's New! Complete 88-page catalog of ATRAX Carbide Tools, includes selection tables and recommended applications. Write today for your copy.*



**THE ATRAX COMPANY**  
NEWINGTON 11, CONNECTICUT

**Specify ATRAX Precision Ground-from-the-Solid Carbide Tools**

ATRAX Representatives and Distributors are located in principal cities throughout United States and Canada. Write us for our Representative's name in your area.

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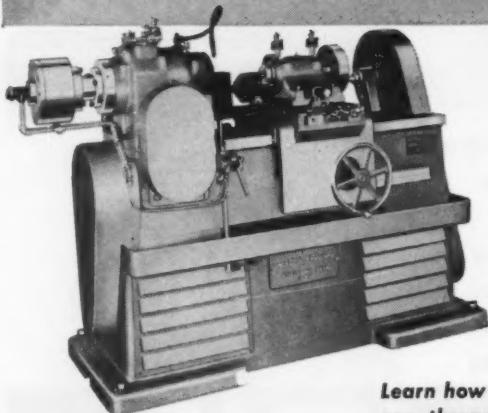
November, 1955



How many operations are required  
to produce threaded parts of  
**NON FERROUS METALS  
HEAT TREATED MATERIALS  
OR VERY SHORT RUNS**



ONLY **ONE** WITH A  
**COULTER**  
**HOB THREAD MILLING MACHINE**  
and it does 'em faster, **AUTOMATICALLY!**



The greater range of speeds and feeds found *only* in a COULTER "H 1", plus the advantage of quality control (even with quick-change-over short runs) makes COULTER a *must* in your shop for fast production of precision internal and external right-hand and left-hand threaded pieces.

Learn how all the exclusive "H-1" features can thread better, faster—automatically.  
Inquire today!

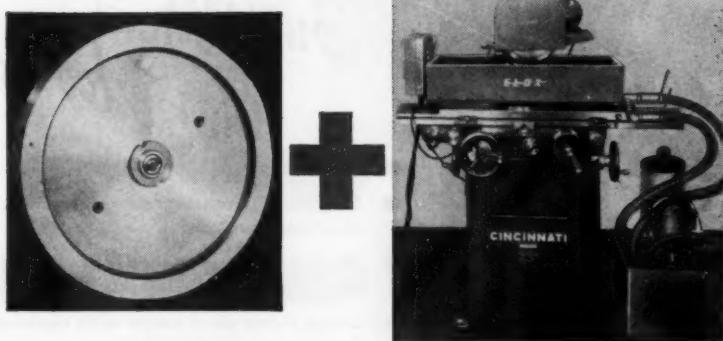
MACHINE TOOL BUILDERS SINCE 1896

The *James*  
**Coulter Machine Co.**

637 Railroad Ave., Bridgeport, Conn.

Encircle No. 272 on Card, Opposite Page 65

MACHINE and TOOL BLUE BOOK



**100% more pieces per grind**  
**300% less tools required per job**  
**400% savings in monthly tool cost**

**the superiority of  
 ELOX electrical  
 discharge  
 grinding was  
 proved by this  
 large automotive  
 company's\*\*  
 unsolicited 2-month  
 comparison report!**

Tool Name, Description:	Solid Carbide Insert	
Part Name:	Crankshaft	
Operation Name:	Finish Front & Rear Thrust Bearings	
	Standard Grind	Elox EDM Grind
<b>TOTAL PIECES PER TOOL</b>	17,290	95,904
<b>MINUTES PER GRIND</b>	21.0	13.75
<b>COST PER GRIND</b>	\$ 1.26	\$ .83
<b>ESTIMATED MONTHLY TOOL COST</b>	\$294.71	\$92.19

*in writing*

Elox will guarantee increased tool productivity over any type of abrasive grinding.

Other Elox equipment available to remove broken taps, drills, etc., from \$495 to \$3450.

***elox***<sup>\*</sup>  
*corporation of michigan*

732 N. ROCHESTER RD. • CLAWSON, MICHIGAN

\*\*Comprehensive report and company name given on request.  
 \*T. M. Reg.

November, 1955

Encircle No. 273 on Card, Opposite Page 65

# LW

## MILLING MACHINE DRILL PRESS—SHAPER VISES

All  
Surfaces Ground  
for Accuracy

- Super-Strong.
- Full-length bearing on ground bar and machined ways.
- Work-holding surfaces always held at true right angles or parallel to table.
- Large Acme steel screw with replaceable bronze nut.



**\$68<sup>00</sup>**

Master size. Jaws 6½" x 2". Opens 5¼" without jaws, 4" with jaws. Wt. 90 lbs.

Junior size, \$46.75. Jaws 4½" x 1¾". Opens 3½" without jaws, 3" with jaws. Wt. 40 lbs.

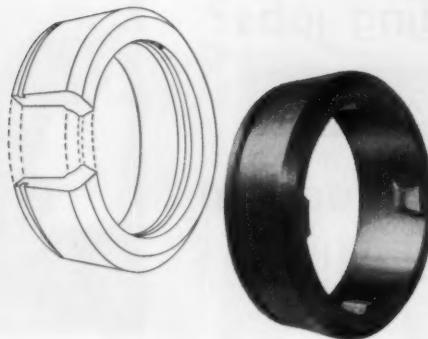
*See your industrial supply distributor or order direct, giving distributor's name.*

Send for complete catalog giving prices and specifications on these quality, low-cost L-W Products



**L-W CHUCK COMPANY**

23 South St. Clair Street  
Toledo 4, Ohio



**I. D. and four  
inverted helical splines  
BROACHED  
the American way**

... 300 parts per hour

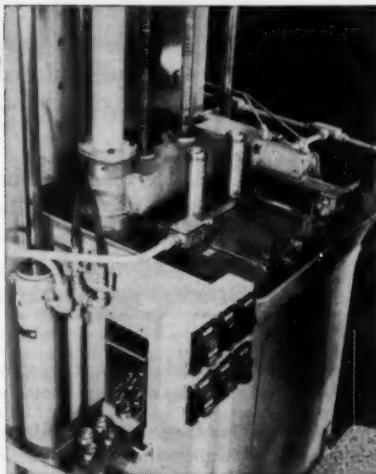
American engineering made this broaching operation fast, automatic and economical.

The finished inside diameter and four inverted helical splines are broached, in this automotive synchronizer ring, two at a time . . . 300 per hour.

American special combination round and spiral spline broaches are used to cut the splines concentric with the I.D.

Feed tubes are here shown as manually loaded but are readily adapted to automation. Parts are fed and ejected by automatic hydraulic slides.

You may have parts that can be produced at significantly lower cost by broaching them the American way. Send part print or sample . . . American engineers will make a recommendation you'll find valuable.



American Catalog  
450 is a complete  
broaching manual  
... write for  
it today.

**American BROACH & MACHINE CO.**  
A DIVISION OF SUNDSTRAND MACHINE TOOL CO.  
ANN ARBOR, MICHIGAN

See *American* First — for the Best in Broaching Tools, Broaching Machines, Special Machinery

November, 1955

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75



# Tough grinding jobs?

Check **Vulcanaire**

high speed precision  
grinding heads!

Many seemingly impossible grinding problems have been solved by adapting Vulcanaire to standard machines or by using one of Vulcan's specially designed machines.

On Surface Grinders, merely remove wheel and guard, clamp vertical or horizontal adaptor to machine as illustrated. No belts necessary. For instance, Vulcanaire used in connection with Vulcan's Rotary Table for Surface Grinders permits the grinding of a circular slot.

Adaptors are in stock to fit the spindle of Vertical Milling Machines for grinding contours, holes and slots.

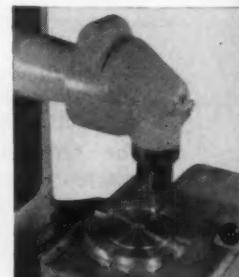
On Internal Grinding Machines Vulcanaire's infinitely controlled speeds furnish the correct surface cutting speed resulting in faster production and micro finish. The adaptor sleeve fits into present housing.

Applied to Jig Boring Machines, Vulcanaire is liked by leading precision manufacturers because its accuracy is guaranteed, producing Vulcanaire jig grinding of large and small parts.

*Send us a blue print on your toughest grinding problem. Recommendations and sketches will be returned to you — no obligation.*



Grinding circular slot using Vulcan's Rotary Table and Magnetic chuck.



Vertical adaptor for Surface Grinders. Grinding small slots

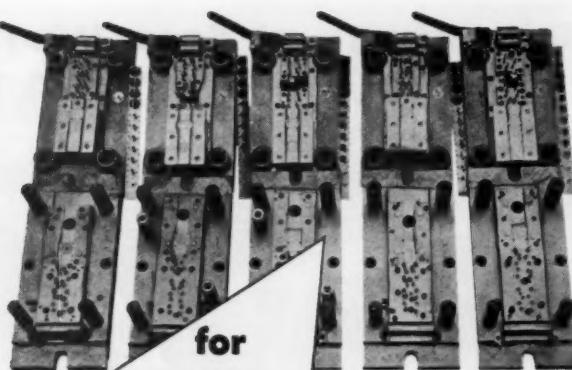


Horizontal application Grinding a Shoulder Punch.

## Major Vulcan Services

Engineering, Processing, Designing and Building . . . Special Tools . . . Dies . . . Special Machines . . . Vulcamatic Transfer Machines . . . Automation . . . including the Vulcan Hydraulics that Form, Pierce, Assemble and size. Vulcanaire Jig Grinders . . . Motorized Rotary Tables . . . Plastic Tooling.

**VULCAN TOOL CO. 710 Highland Avenue DAYTON 10, OHIO**



for  
precision  
jobs like this....**Moore Jig Borers**  
**and Jig Grinders are**  
**"MADE TO ORDER"**



**NO. 2 MOORE JIG BORER.**  
Range 10" x 16" x 16" height.  
Features infinitely variable  
spindle speeds, three power  
feed ratios, centralized controls.



**NO. 2 MOORE JIG GRINDER.**  
Range 10" x 16" x 16" height.  
Grinding speeds from 12,000  
to 60,000 rpm. Infinite feeds  
up or down; spindle-housing  
heat control; features slot  
grinding attachment.

"**HOLES, CONTOURS AND SURFACES**"  
is bound to become a classic to the man  
or shop that does accurate work."

American Machinist Book Review  
424 pages — \$5 U.S.A., \$6 elsewhere

Moore Jig Borers and Jig Grinders are made to order for jobs that require precision hole location—and plenty of it.

Take, for example, these five progressive compound dies used to pierce, shave, gut and blank intricate timing-device parts.

Holes in punch plate and stripper were jig bored in a No. 2 Moore Jig Borer. Holes in the corresponding die parts were jig bored in the same precision machine, hardened and then jig ground in a No. 2 Moore Jig Grinder. Perfect line-up was insured, since all holes had to be held to  $\pm .0002"$ , both for position and hole size.

The No. 2 Moore Jig Borer, with its built-in system of accurate lead screws, can spot, drill, bore or ream all holes in a workpiece to "tenths" with minimum tool changes. The No. 2 Moore Jig Grinder can accurately contour grind, slot grind and form grind die sections in a third of the time required by other means.

These Moore toolroom teammates provide a one-two punch that can knock the fat off your die-making costs. They supply an *Engineered Hole Location Service* that permits tool and die sections to be produced concurrently...puts die-making on an interchangeable-parts-and-assembly basis...lengthens die life...saves you time and money all along the line.

Write today for our detailed literature that pictures and describes many toolroom and production jobs for which Moore Jig Borers and Jig Grinders are made to order.

**MOORE SPECIAL TOOL COMPANY, INC.**  
728 Union Ave., Bridgeport 7, Conn.

# ADD (MOORE) TO YOUR TOOLROOM

JIG BORERS • JIG GRINDERS • PANTO-CRUSH WHEEL DRESSERS • DIE FLIPPERS • MOTORIZED CENTERS • HOLE LOCATION ACCESSORIES

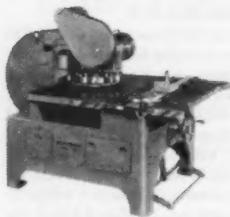
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November, 1955

# Send Drawings of Your Work to WIEDEMANN



## for a *FREE* Time Study



From the small hand operated

R-2 to the 150 ton Turret Punch

Press, there's a Wiedemann de-

signed for your short run piercing

needs.

Learn how you can save 60% to 90% on piercing steel sheet or plate in small to semi-production lots with a Wiedemann Turret Punch Press . . . and these cost saving facts are based on drawings of your typical jobs. In addition, you will receive, without obligation, a recommendation for the most efficient, low cost tooling, and a detailed quotation on the Wiedemann best suited for your particular requirements.

This is not a new service. The cost reductions indicated by Wiedemann surveys have been selling these Turret Punch Presses for many years. It will pay you to get the facts about how a Wiedemann Turret Punch Press can pay for itself in two years or less through reduced piercing costs.

Send drawings of your work for a free time study and equipment recommendation or write for Bulletin 101 today.

## WIEDEMANN MACHINE COMPANY

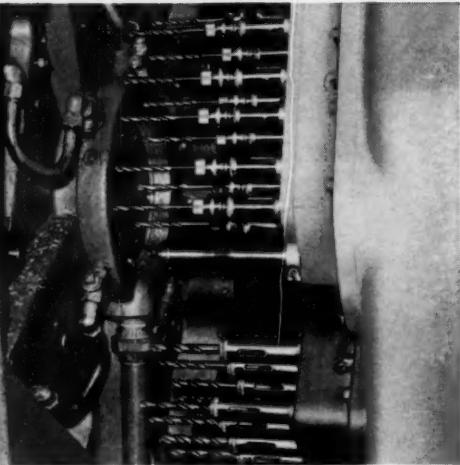
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MACHINE and TOOL BLUE BOOK

**W&B**

**HIGH SPEED  
and CARBIDE  
DRILLS provide  
BETTER  
PRODUCTION  
DRILLING**



Pictured is the production drilling and reaming of bolt holes in connecting rod caps made from steel forgings. This horizontal multiple spindle machine in one of the largest automobile manufacturing plants in the country, uses 48 Whitman & Barnes drills and reamers in each set-up. In record time the bolt holes are drilled, chamfered, core drilled and reamed.

Throughout this mammoth plant W & B high speed and carbide drills are used on many other operations to secure maximum production, minimum down time for tool replacements and reduced manufacturing costs. If you want better drilling production—the durability and cutting speed of W&B drills are your answer.

*"Makers of Fine Tools Since 1848"*

DRILLS, REAMERS, COUNTERBORES, COUNTERSINKS, TOOL BITS, CARBIDE TOOLS, SPECIAL TOOLS

**W&B**

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COMPANY \_\_\_\_\_

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CITY \_\_\_\_\_ ZONE \_\_\_\_\_ STATE \_\_\_\_\_

**WHITMAN & BARNES**

NEW YORK CHICAGO BOSTON ATLANTA



Encircle No. 279 on Card, Opposite Page 65

November, 1955

79

*Now... modernize your grinding operations  
without draining away your capital!*

*Take advantage of the* **Norton**  
**Grinding Machine**  
**Lease Program**

*for low-cost leasing of new  
Norton grinders and lappers*

Naturally, you want to meet competition on at least equal terms—with the latest and best in modern grinding equipment.

Yet, like so many other manufacturers, you may want to conserve your working capital—and the cost of replacing inefficient producers is delaying, if not prohibiting your modernization.

What's the answer?

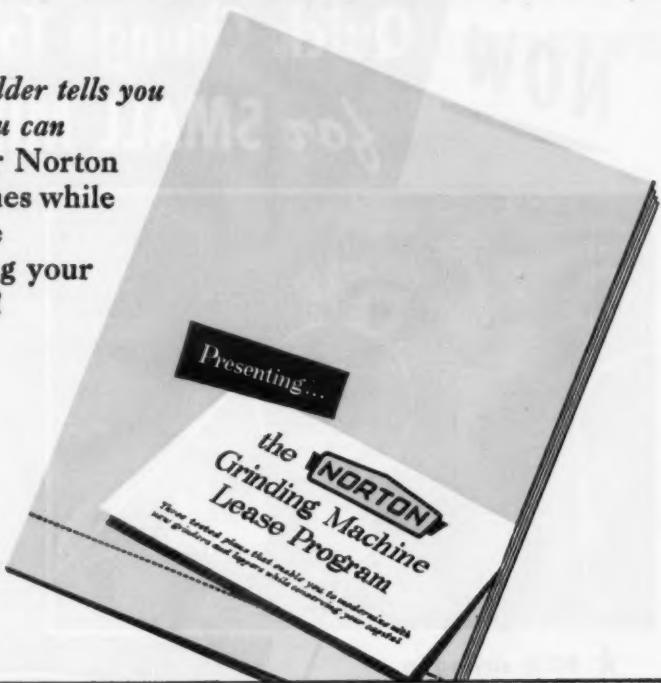
The answer is the Norton Grinding Machine Lease Program, developed to help manufacturers secure the grinders and

lappers they need for modernization—without weakening their financial position.

The new Norton Program gives you three separate plans for leasing new Norton grinders and lappers, with nominal payments extending over a seven-year period. Each plan meets specific requirements. Each plan is extremely flexible, providing for early termination of the lease, or purchase of the equipment, at your option.

One of these plans may help pave the way to better business for you. Don't miss getting complete facts on them—send in the coupon!

*This folder tells you  
how you can  
pay for Norton  
machines while  
they're  
building your  
profits!*



Under the Norton Grinding Machine Lease Program a comprehensive selection of the most popular types and sizes of machines is now available to you, under low-cost, flexible leasing arrangements.

This folder describes the Program, giving details of the three different

plans by which you can improve your competitive position and profits. Send for it now — and remember: only Norton brings you such long experience in both grinding machines and grinding wheels to help you produce more at lower cost.

**To Economize, Modernize With NEW**



**GRINDERS and LAPPERS**

*Making better products...  
to make your products better*

District Sales Offices:  
Worcester • Hartford • New York (Teterboro, N.J.)  
Cleveland • Chicago • Detroit

NORTON COMPANY, Machine Division  
Worcester 6, Mass.

Please send me your folder on the Norton Grinding Machine Lease Program.

Name.....

Title.....

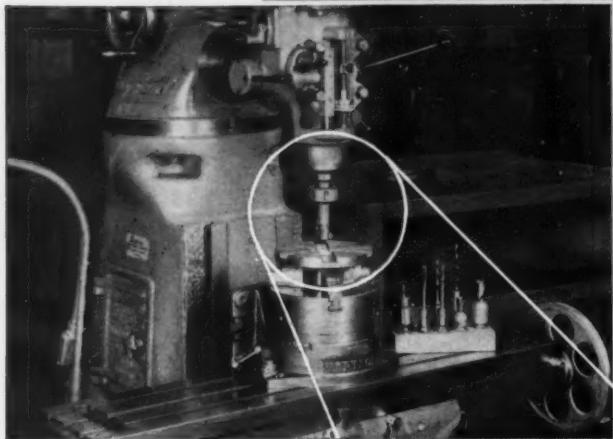
Company.....

Address.....

City..... Zone..... State.....

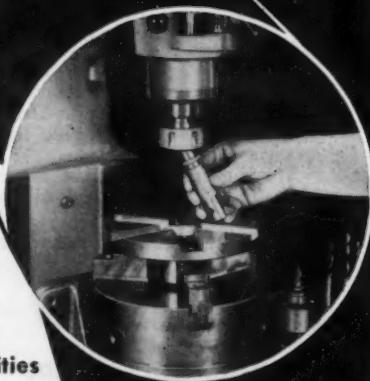
**NOW**

# Quick Change Tools... for SMALL MILLS...



- ★ 80% saving in down time
- ★ Only  $\frac{1}{2}$  inch tool clearance needed
- ★ Not necessary to move table when changing tools
- ★ Eliminates loosening and tightening draw bolt

Tools completely eliminate the time lost in changing conventional type tools... Complete sets are available, write for literature covering specifications and price. Representatives in principal cities



**PORTAGE Double-Quick TOOL CO.**

1037 SWEITZER AVENUE • AKRON 11, OHIO

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MACHINE and TOOL BLUE BOOK

# Featured IN THIS ISSUE

Machine Tool Show Acclaimed Great Success .....	101
Shop Hints .....	165
Carbide Grit and Air Bubbles Bombard Holes Through Steel Aircraft Sleeve	174

**Yours very truly!** This is where our readers often play a part in our book. It is from these letters that we learn what to write about, what the reader wants to know, and what he isn't interested in reading. Many of these letters hold the key to many important metalworking questions and they deserve to be scanned, at least, by all our readers. Page ..... 87

**Capital Roundup,** by Arnold Kruckman, Blue Book Washington Correspondent, covers federal government business dealing particularly with the machine tool industry. This month Mr. Kruckman covers the Defense Mobilizer's industrial expansion program; the federal trade commission; the U.S. export situation; and the rapid recovery of New England business from the recent tragic hurricane. Page ..... 90

**Machine Tool Show Acclaimed Great Success.** Many of the exhibitors at the recent machine tool Show at Chicago demonstrated some very fine machining techniques which drew wide attention from a large percentage of the 300,000 visitors. The Editors of MACHINE and TOOL BLUE BOOK review in this issue some of the work being demonstrated. However, in many cases no work was being performed on machines and it was impossible to discuss a specific operation. Many of these machines will be reviewed in greater detail in the months to come. This feature includes pictures, manufacturer's name, and the operations being performed on the machine at the time of the visit of our editors. Page ..... 101

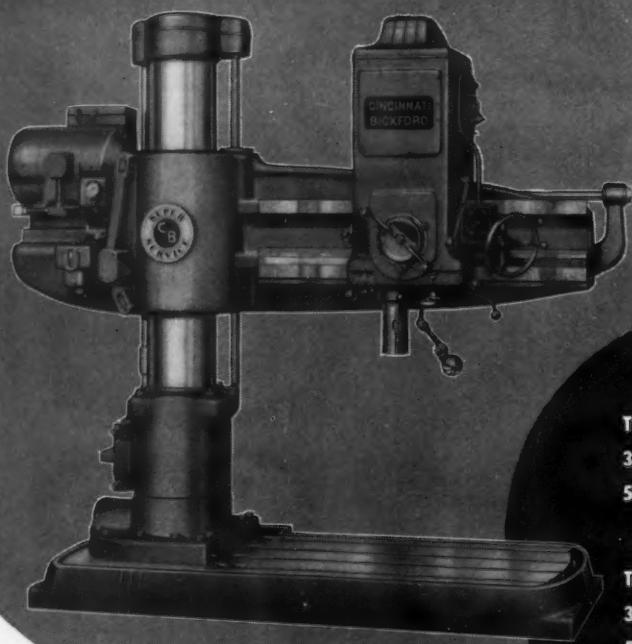
**Shop Hints.** This monthly feature includes some timely cost-saving hints which should go a long way in helping solve some old familiar problems. They include: Split Bushing Cost Reduction; Magnetic Tap Guide; Making Adjustable Struts; Oil Ring Solves Broaching Problem; Parting-Off Aid; If There's a Problem, There's an Answer; Plate Storage Features Selectivity; and Marks Help Chuck Jaw Setting. Page ..165

**Carbide Grit and Air Bubbles Bombard Holes Through Steel Aircraft Sleeve,** by William W. Wood, tool research engineer, Chance Vought Aircraft, Inc., covers a new ultrasonic machine which cuts a rectangular slot .050" and .125" wide in a hydraulic fluid type sleeve. The tool bit oscillates 30,000 times a second, and corners are held to a .002 maximum radius. Page ....174

**Modern Tools in Action.** This section deals with the latest metalworking machinery, and this month features a 700-ton, seven station transfer feed press which produces all of the refrigerator pans and shelves General Electric uses for its annual output of more than a half million refrigerators. This press produces 12 deep-drawn refrigerator pans per minute and feeds them off onto a conveyor automatically. Page ....185

**News of the Industry.** With several months remaining before the 1956 ASTE Industrial Exposition at Chicago, officials reveal that more space has already been assigned than was used for the entire show when it was held in 1952. This section also includes the latest appointments, mergers and general news happenings within the industry. Page ..... 195

# new... Super Service RADIALS



The 9" column machine  
3' or 4' arm  
5 h. p. driving motor

The 11" column machine  
3', 4' or 5' arm  
5 h. p. or 7½ h. p. motor

These new powerful 9" and 11" column Super-Service Radials, have 12 spindle speeds and 6 rates of power feed—all made through sliding gears. The very heavy and rigid frame, with an arm bearing on column 26" long, permits use of maximum feeds and full horsepower.

Fast, easy handling results from convenient, direct-reading, simple controls; "finger-tip" feed engagement, use of anti-friction bearings throughout, and proper weight distribution. The driving motor, mounted on the arm, provides better balance of arm and head. Many other advantages are shown in new Bulletin R 31 . . . Write for it—today!

CINCINNATI  
**BICKFORD**



RADIAL AND UPRIGHT DRILLING MACHINES

**THE CINCINNATI BICKFORD TOOL CO.**

Cincinnati 9, Ohio, U.S.A.

Subsidiary of GIDDINGS & LEWIS MACHINE TOOL CO., Fond Du Lac, Wisconsin

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# AS THE *Editor* SEES IT

## Let's Not Belittle the Standard Machine

Someone at the Machine Tool Show was heard to remark, "This isn't a mechanical show, it's really an electrical and electronic show. It's a case of the tail wagging the dog." Sounds like a witty remark, seemingly backed up by a panelful of truth. As a matter of fact, unless we keep our own wits keenly about us we stand in danger of swallowing a lot of electrical and electronic juice.

Personally, we find the witticism a bit indigestible. We do not belittle the controls and tape people and their electrical and electronic wizardry, for they have ushered in the next technological revolution. We do most emphatically say that the recent show was still a mighty exhibition of standard machine tools of advanced mechanical design.

So much has been said about tape-controlled equipment that we stand in danger of losing touch with developments made in standard machine tools, which still form the backbone of our production techniques. We earnestly believe the machine tool show was a splendid tribute to the creative thinking of the machine tool designer whose standard products will cut costs and increase production.

### Replacing of obsolete equipment

with new, standard machines is a must; replacing of standard machines with special machines, electronically controlled or otherwise, where applicable, is also a must. Standards and specials both have their places; the proper machine must be selected. However, one must be wary and look carefully into a two thousand dollar machine with 15 thousand dollars worth of controls. You can buy very simple variable speed drives adequate for most jobs, or you can buy an electronic drive 50 times as expensive, also doing its job well; which one will suit your cost and production program?

In the last analysis we must ask ourselves: how much will it cost to remove a given amount of metal? how much will it cost to produce a given number of piece parts? We must start at the end and work toward the front; and we dare say you'll agree: the standard machine tools as seen at the show can do the job quickly and efficiently and at lower cost. We'd be smart to set about replacing our clunkers with efficient, modern equipment.

William F. Schleicher  
Editor-in-Chief

# Sharp Clean Cuts EVERY TIME

Many thicknesses and sizes of metal are cut on this Steelweld Shear every day. Thanks to Steelweld's exclusive MICRO-SET knife adjustment, it is easy to set the knife clearance to the exact amount which will produce the best cut for every plate run through the machine.

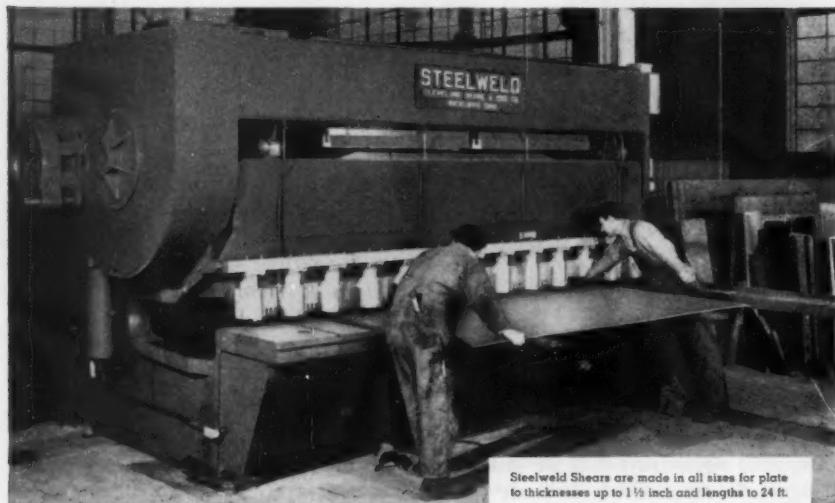
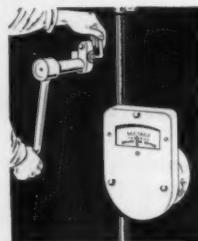
If desired, the knife clearance can be set for an average thickness and all plates cut without changing the clearance. This procedure is used with most shears because to change knife clearance on them is a tedious, difficult operation which usually puts a machine out of service for hours.

In contrast, knife adjustment on Steelwelds is made in a few seconds. It's simply a matter of turning a crank until an indicator points to the figure representing the thickness of plate being cut. No bolts to loosen; no parts to move. There is no need for using "average" knife settings.

The clutch and brake unit is another outstanding feature of Steelweld Shears. As it is air-operated, it is quick, snappy in action. Its low-inertia design assures cool operation, even after long continuous production runs, because energy to be dissipated is minimized and working pressure necessary on clutch and brake facings is greatly reduced.

The many features of Steelweld Shears make it worth your while to get all the facts.

Because of  
MICRO-SET  
Knife Adjustment



GET THIS BOOK!  
CATALOG No. 2011 gives  
construction and engineering  
details. Profusely illustrated.

THE CLEVELAND CRANE & ENGINEERING CO.  
5246 East 282nd Street, Wickliffe, Ohio

**STEELWELD** *PIVOTED*  
*BLADE* **SHEARS**

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MACHINE and TOOL BLUE BOOK



very truly!

## Letters to the Editor

### Why Not Welded Bridges?

In a current issue of a business weekly magazine, it is reported that constant flexing by traffic of the structure of the San Francisco Golden Gate Bridge has caused its rivets to work loose. One by one these rivets are being replaced with bolts.

Other bridges and riveted structures have had the same difficulty with loose rivets.

If these bridges had been built with welded construction, which is the simplest yet strongest way to fabricate steel structures, this extremely expensive procedure of replacing rivets would never be necessary. Furthermore, leading structural authorities state that welded bridges can be and are built with at least 20% savings in the amount of steel used.

European countries have had a long successful experience of saving steel with not only welded bridges of long spans, but also all types of steel structures. For almost 20 years, highway and railroad bridges built in Sweden have been welded.

Why, with the evidence before us proving the advantages of welded construction, we in the United States are slow to

take this step of progress is difficult to understand. Some states have adopted policies of using welded construction and others are presently considering it. Nevertheless our educators, schools, highway officials and the people who design and make bridges and other steel structures have a responsibility to make this progress as rapidly as possible.

The country is undertaking a gigantic road building program which will entail the building of many bridges with public funds. Will these bridges be obsolete before they are built?

*C. G. Herbruck,  
Assistant to the Secretary  
The Lincoln Electric Company*

### Too Old at Forty

We would like to request your permission to reprint an editorial that appeared in the March 1955, issue of the MACHINE and TOOL BLUE BOOK, entitled 'As the Editor Sees It'—Must be under 40.

You can readily appreciate that this editorial is most appropriate and in line with the thinking and ideals of the Forty Plus Association. Therefore, it will be of the utmost service to this Assn. if we

can have your permission to reprint this editorial for distribution in those channels where we feel it will be of the greatest service.

We certainly congratulate your organization for taking this stand and you may be assured that full credit will be given your publication in the reprinting of this editorial.

E. E. Trinides  
Executive Manager  
Forty-Plus Association of  
Southern California

**Permission granted.**

#### Special Reports

Do you publish a book called "Machine Tools—Their Uses, Specifications, and Manufacturers"? We are interested in receiving a copy of this for our files. Therefore, any information that you can give us on the purchasing of this book will be greatly appreciated. . . .

M. I. Williams  
Research Librarian  
A. O. Smith Corp.

Please quote price on the Machine and Tool Blue Book, Volume 2, by William F. Schleicher.

William Medico, President  
Medico Electric Motor Co., Inc.

The book mentioned above has been published in two volumes. Volume 1, priced at \$3.00, contains the first sixteen special reports which appeared in the BLUE BOOK over the past few years. Volume 2, priced at \$4.50, contains the reports on drilling, gear making, boring, and grinding machines, and the MAPI replacement formula.

#### Information, Please

We're interested in locating the correct address of the Association of Importers of Machine Tools in New York City. . . .

Frank Matras, President  
Frabill Manufacturing Co.

We are in the market for an "Upright" Wire Bending Machine. . . . To the best of our knowledge, such firms as Nilson or Baird manufacture only Horizontal type machines. . . .

K. Breuer, Manager  
Lilo Rail of Canada, Ltd.

Any information you may have on the above will be greatly appreciated.

Please give an address of some firm that makes grinders for ice skates.

J. A. Bruns  
J. A. Bruns Saw Shop

Please send name and address of manufacturers of staking tool sets (jewelers).

John Greenboue  
Eclipse-Pioneer  
Div. Bendix Aviation Corp.

**Information sent.**

#### GM Interview

May I have a copy of your July 1955 issue. I am particularly interested in the article concerning an interview with Mr. Charles Chayne of General Motors.

I run a paid advertisement column in our local paper titled "Candid Comments About Cars and Such—" and I would like to use some of this material if I may have your permission.

Fred Kohlenberg, President  
Kohlenberg Cadillac-Oldsmobile,  
Inc.

**Permission granted.**

#### Wage Incentives

I have recently become acquainted with your magazine and since I am now installing a machine shop incentive plan, would appreciate any information you might be able to give me with regard to machine shop wage incentives. I would appreciate a tearout from your July issue of "Simplified Drafting Boosts Drawing Room Productivity."

Please add my name to the list for booklets of H. R. Nissley's articles on Timestudy; and also the subscription rate for your magazine.

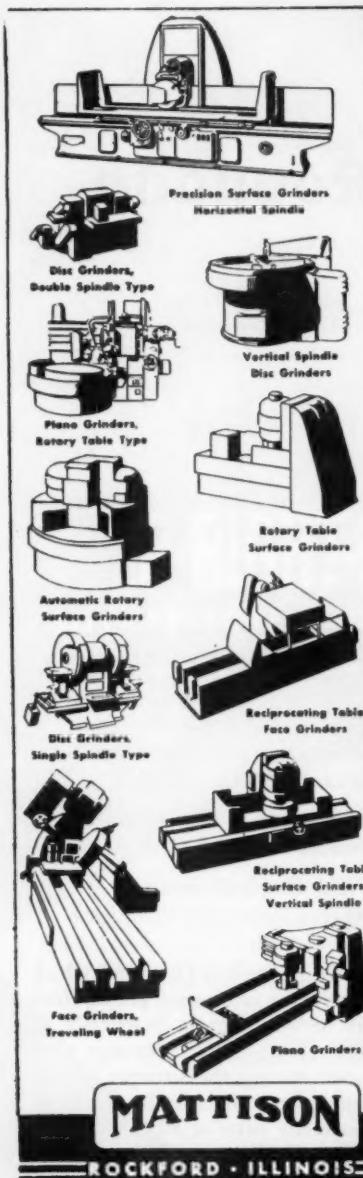
Charles E. Clark, Jr.  
Roger R. Wilson, Consulting  
Ind. Engrs.

#### Time Study

Please add my name to the list of persons waiting to receive Mr. Nissley's booklet on Time Study. I read all the articles in Blue Book and found them very interesting.

Most books written on this subject deal with a situation where production is high, operators are experienced, and conditions in general are perfect. I have been in Time Study and Methods work for ten years and have yet to find this perfect situation. Mr. Nissley's articles are based on the practical aspects of time study, and not on a lot of theory. . . .

George Shreve,  
Methods Dept. Mgr.  
The Flexible Co.



# MATTISON GRINDERS

*If it's a Flat Surface to Grind  
There's a Mattison to Grind it.*

• Mattison now is in a position to work with you on all your surface, face and disc grinding problems. These machines are made in various types to handle a wide range of work. Experienced fixture engineers are available to give you best production efficiency with Mattison Machines.

For any flat grinding, ask for our recommendations on the proper method and machine for your job. No obligation, of course.

For catalog on all machines, ask for free copy of general bulletin.



40 hours before — now 4 hours. Pump case ground on Mattison Horizontal Spindle Precision Surface Grinder



125 surfaces of cast iron compression heads per hour removing 1/32" stock with Mattison No. 24 Rotary Surface Grinder



900 connecting rods per hour, using 40 station fixture to finish grind crank and wrist pin end of assembled rod with Mattison No. 72 Grinder



Shows variety of work run on Mattison Face Grinders

**MATTISON**

ROCKFORD - ILLINOIS

**MACHINE WORKS**



# Capital Roundup

By Arnold Kruckman

Blue Book Washington Correspondent

## Baldenhofer Successor to be Named

Our friends in the metal and metallurgy group of BDSA tell us that the new head has been chosen but that practically no one knows who he is. The Department of Commerce is suppressing the news until the new man has been cleared, which is expected to take place sometime early in October. Ralph R. Baldenhofer, who came back for a short time during the flood in New England, has returned to his job as Executive Vice President and Treasurer of the Thompson Grinder Company.

## BDSA Auto. Div. Has New Boss

The Automotive Division of BDSA, closely allied to the Metal and Metallurgy Division, has a new head. He is William J. Jones, Production Manager for the Chrysler Company. He has just come into the office. The Metal and Metallurgy Division has a new consultant, Ralph Lickey, who has joined the group in recent weeks. They tell us that a number of conferences and meetings are scheduled to start in

- *eleven industrial expansion programs to be re-opened*
- *retailers expect best Christmas in history*
- *non-military goods exports show semi-annual increase of 8%*
- *price-fixing with foreign competitors not exempted under Sherman Act*
- *U.S. trade increasing with Soviet bloc*
- *New England business makes surprising comeback*

October in the various Divisions, which will bring many interesting people from industry to Washington. Practically all of these conferences and meetings were abandoned during the summer. Their resumption starts the wheels of activity going in many parts of BDSA. One of the busiest Divisions will be that of Public Relations which is headed joint-



# B-RIGHT-ON®

## SOCKET SCREW PRODUCTS

*always measure up!*



Socket screw users who want *what* they want *when* they want it know it pays to specify B-RIGHT-ON! Brighton Socket Screw Products *always measure up*.

Standard or special, Brighton Screws must meet and pass factory standards that are higher even than those specified by the ultimate user of the screws. Rigid control, from initial steel selection to final packaging, certifies every screw as B-RIGHT-ON quality.

Selected mill supply houses, Brighton distributors, complete the control chain, assure the user of service and delivery as dependable as the screws . . . B-RIGHT-ON service.

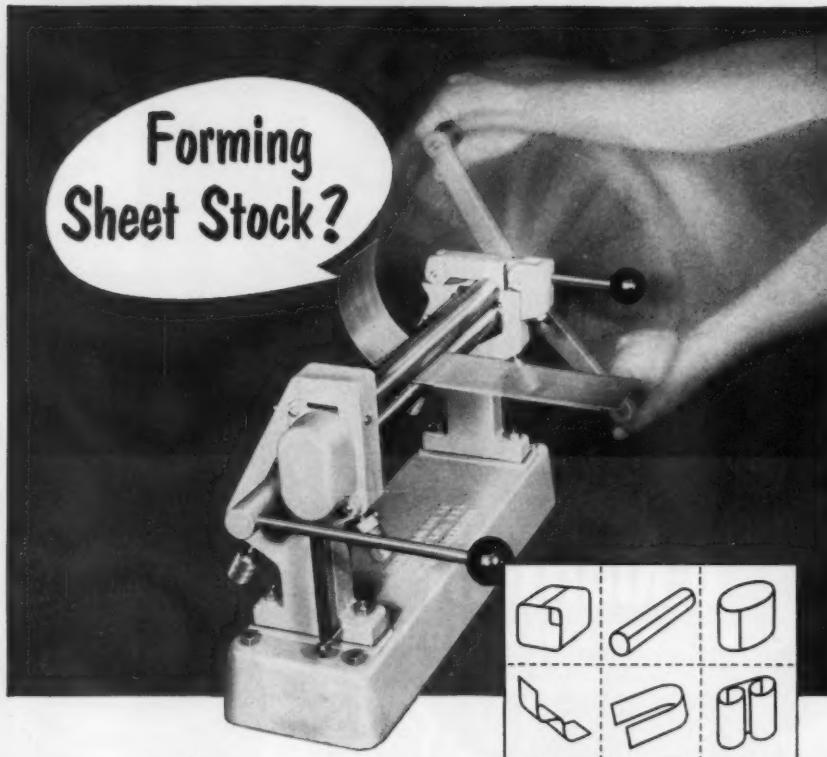
Write for descriptive literature . . . see how

**YOU CAN DO BETTER WITH  
B-RIGHT-ON.**

**THE BRIGHTON SCREW  
& MANUFACTURING CO.**

1839 READING RD., CINCINNATI 2, O.

Forming  
Sheet Stock?



**Do It Quickly, Easily, Accurately with a New  
DI-ACRO\* ROLLER**

A cam actuated idler roll—an exclusive feature—makes it possible to form any diameter circle in two operations. Also, bends can be located at any point along the edge of a sheet with straight sections on both

sides of the bend. Special rolls are available for forming round, other shaped stock. Eight models. Rated capacity to 16 gauge. Forming widths from 6 to 42 inches.



**SEND FOR 32-PAGE CATALOG**

Gives complete details on Di-Acro Rollers, Brakes, and hand and power operated Benders, Notchers, Punch Presses, Rod Parters and Shears.

**O'NEIL-IRWIN MFG. CO., 314 8th Ave., LAKE CITY, MINN.**

\*pronounced  
Die-ack-ro



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ly by Harry Wright and Richard L. Blaisdell.

### **Industrial Expansion**

Defense Mobilizer Arthur S. Flemming announced at the end of September that eleven industrial expansion programs will be reopened and twenty-five others will be closed. Under the program, industries certified by the Defense Mobilizer as in need of expansion by reason of defense requirements are permitted to write off expansion costs against taxes in five years instead of the usual twenty-year depreciation.

Back in August the Defense Mobilizer suspended the thirty-eight industrial expansion "goals" then open. During the interval all of the industries concerned have been resurveyed by the Government to determine again if additional productive capacity is needed to keep the Nation's industry in shape to meet any emergency.

In announcing that eleven of the expansion goals suspended in August for resurvey were being reopened, Mr. Flemming said that the expansion program of the iron ore taconite industry remained on the suspended list. The aluminum production goal, also suspended in August, was closed at the end of September.

This, as is the case of the additional twenty-five closed during the last days of September, means that the Government will no longer encourage expansion in those industries by granting five-year depreciation deductions from income taxes.

### **Federal Trade Commission**

In a double ceremony, during the latter part of September, Federal Trade

Commissioner John W. Gwynne of Waterloo, Iowa, was sworn in as Chairman of the Federal Trade Commission, and Sigurd Anderson, former Governor of South Dakota, was sworn in as a new member of the five-man Commission filling the vacancy created by the resignation of Commissioner Edward F. Howrey. Both Mr. Gwynne and Mr. Anderson are Republicans. The latter is an interim appointee, subject to Senate confirmation. The unexpired term which Mr. Anderson fills, runs until September, 1960.

During the last week of September William C. Kern of Indiana was sworn in as a member of the Federal Trade Commission. He is the first former staff member in the Commission's forty-one year history to become a member of the five-man Commission. Kern is a Democrat, and was confirmed unanimously by the Senate on July 21. He succeeds James M. Mead of New York. Kern's father was the Senator from Indiana.

### **Business Outlook**

Various Washington reports assert business this year will have a new all-time high. Retailers are reported to expect the best Christmas volume in history. Construction, which has increased every year since World War II, is expected to go still higher this year and rise again in 1956. All agencies, Government and non-government, insist, with the exception of Agriculture, that business barometers are steadily rising and that the economy is operating practically at capacity. The National Chamber of Commerce emphasizes that foreign markets for domestic produce have not recovered as fully as was expected. Due

to these factors farm income the first half of 1955 was 4 percent lower than during the same period in 1954. The less serious uncertainties were listed as the increase in consumer credit and mortgage debt, next year's election and the upward pressure on prices created by recent wage and fringe benefit raises, but primarily by the rise in credit. The National Chamber of Commerce and other agencies urge tightening of credit now to check excessive upward price pressures and to allow elbow room to loosen credit next year to buoy the economy.

### **International Cooperation**

The International Cooperation Administration during September reported the following allotment of funds for the purchase of machine tools: Formosa, \$18,500; for the Chinese Army School, \$6,000; Vietnam, \$10,000; India, \$123,250; Israel, \$18,322. This makes a total of \$176,072 for the month of September.

### **Jordan Business Laws**

The Kingdom of the Jordan recently published a pamphlet entitled "Laws to Encourage Industry and Investment in Jordan" which contains provisions of two companion laws designed to attract foreign private investors and encourage establishment of new industrial enterprises. It is published as No. 55-86 in Economic Reports, Part 1 of Bureau of Foreign Commerce's World Trade Information Service, and may be purchased from the Superintendent of Documents, U.S. Government Printing Office at 10c a copy.

### **Trade Agreements**

The Interdepartmental Committee on

Trade Agreements issued, on September 21, formal notice of the intention of the U.S. Government to participate, under the authority of the Trade Agreements Act of 1934, in reciprocal tariff negotiations. The hearings will be held before the Committee for Reciprocity Information in Washington beginning at 12 noon on October 31. Applications should be filed during October. Countries expected to participate include Australia, Austria, Belgium, Canada, Chile, Cuba, Denmark, Dominican Republic, Finland, France, Federal Republic of Germany, Greece, Haiti, India, Italy, Japan, Luxembourg, Netherlands, Nicaragua, Norway, Peru, Sweden, Turkey, Union of South Africa and the United Kingdom.

### **U. S. Exports**

U.S. exports of non-military goods in the period January-June this year mounted well above recent semi-annual levels, while imports rebounded sharply from the low point of the 1953-54 decline recorded for July-December last year, according to the Department of Commerce. The advance showed a further increase of 8 percent to \$7 billion, their highest semi-annual total since the first half of 1952.

Most of the increase from the first half of last year was directed to Western Europe, which has maintained the vigorous economic growth in evidence since 1953. A sizeable gain also appeared in exports to Canada.

The total of all U.S. exports, military as well as non-military, fell off slightly from its level of a year earlier to \$7,600 million. In contrast to the large gain

# BAKER



## SENSITIVE DRILLING MACHINES

- ★ IMMEDIATE DELIVERY
- ★ MULTIPLE SPLINED SPINDLE
- ★ DYNAMICALLY BALANCED
- ★ SPEED INDICATOR & SELECTOR
- ★ PRELOADED SPINDLE (See Cutaway)
- ★ TWO PIECE FRAME CONSTRUCTION FOR FLEXIBILITY

The Baker line of drilling and boring machines is now more complete than ever before, with the addition of the new Baker Sensitive. Baker's 75 years of engineering experience in the drilling and boring field is now at your disposal in light-duty sensitive type units. The machine illustrated is best for light-duty drilling operations. Let Baker Representatives tell you how the Baker will save you money and put you ahead of competition.



Cutaway shows why the Baker spindle preloading prolongs drill life. Ball bearings also lengthen tool life. These, and many other features mean money to you.

### GENERAL SPECIFICATIONS KTVS VERTICAL MOTOR DRIVE

1" CAPACITY IN CAST IRON, $\frac{1}{2}$ " IN STEEL	12"
Spindle centerline to column face.....	27 $\frac{1}{2}$ -37 $\frac{1}{2}$ "
Spindle speed—with 1200 R.P.M. motor.....	7"
Spindle travel.....	10"
Rock travel.....	32 $\frac{1}{2}$ "
Table adjustment.....	$\frac{1}{2}$ or $\frac{3}{4}$ "
Morse Taper in spindle nose.....	

\*Speed adjustment between the lowest and highest speed is INFINITE through selection.

### BAKER BROTHERS, Inc.

TOLEDO, OHIO

DRILLING...TAPPING...KEYSEATING...CONTOUR GRINDING MACHINES

Encircle No. 287 on Card, Opposite Page 65

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in non-military exports there was a cut of over half in shipments of grant-aid military equipment and supplies under the Mutual Security Program.

Among the leading export commodities listed were machine tools in 1954, January to June, the total was \$111 million; in the July-December period, \$99 million; in 1955, during the January-June period, \$100 million.

### Foreign Investments

The Office of Business Economics, U.S. Department of Commerce, reports earnings on U.S. private foreign investments reached a new high of \$2,500 million in 1954. Per contra foreign long-term investments in the United States reached a record value of \$11 billion at the end of 1954.

These long-term investments in the United States are in addition to \$15,700 million of liquid dollar reserves and working balances held in the United States by foreign governments, private businesses and individuals at the end of 1954. Such assets are held mainly in the form of bank deposits or U.S. Government obligations. Government sources report that foreign-controlled enterprises in the United States have increased in value by \$1,500 million since 1946. Most of the growth has been financed out of earnings of established enterprises, but a number of important new enterprises have recently been organized.

The value of foreign investments in U.S. corporate securities, very largely corporate stocks, rose by nearly \$3 billion from 1946 to the end of 1954.

Nearly all of the increase represents the general rise in market value.

Canadian long-term investments in the United States are substantial—\$2,300 million at the end of 1954. About half of this is invested in controlled enterprises established in the United States to take advantage of the much larger market here. To a considerable extent these enterprises are financed from U.S. sources.

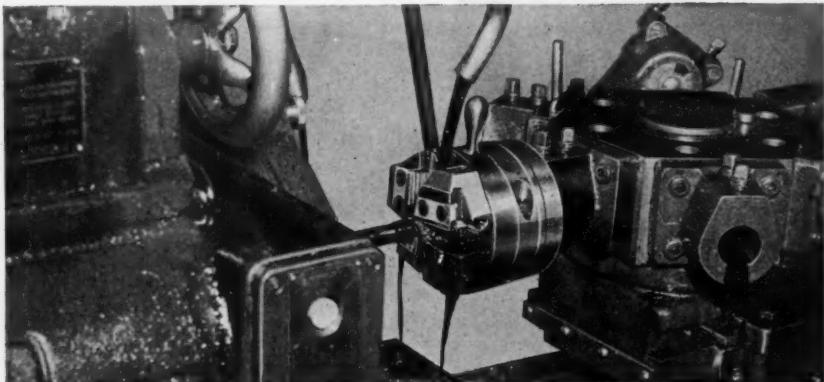
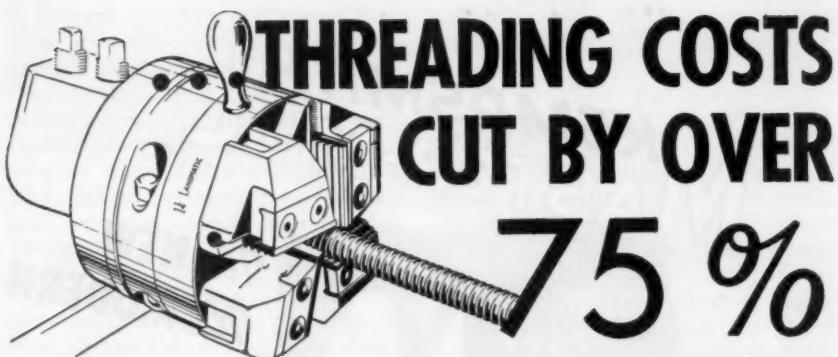
Latin American investors have been acquiring comparatively small amounts of U.S. corporate securities in recent years. Most Latin American assets here are in short-term deposits.

### Indian Markets

"Marketing Areas in India," a new report issued by the Bureau of Foreign Commerce, U.S. Department of Commerce, is said to present an interesting picture of the growing market for U.S. products in the subcontinent of Asia. The report forecasts a sharp rise in consumer income, bringing a larger demand for almost all products. But U.S. exporters are warned to be prepared to face severe import restrictions and heavy competition from European suppliers and domestic producers. The report gives a great deal of detail about India's four marketing areas—Bombay, Calcutta, Delhi and Madras.

### Djakarta Trade Fair

Indonesia is eager to develop direct trading relationship with the U.S. It has spent much effort to induce U.S. representatives to participate in the International Trade Fair now open in Djakarta. Thousands are visiting the



Time Study records of a large aviation equipment company show still another job where LANDMATIC Heads have effected large savings.

Here, a 1 1/4" LANDMATIC Head with Lead-screws is cutting a 5/8-6 Acme thread on a Stabilizer Screw used by a light aircraft manufacturer. The thread is held to the close tolerance of  $\pm .001$  between the P.D. of the thread and the O.D. of the screw, for a full thread length of 5 1/8" on the cold-drawn piston stock, Spec. # AISI, B1112.

Former methods required two passes to produce the finished thread—one roughing and one finishing cut. The thread is now cut in one pass in .192 at a spindle speed of 230 R.P.M.

Approximately 3500 pieces are cut between chaser grinds. Hand fitting with the mating nut in assembly, previously necessary, has been eliminated. Total cost savings in all operations are in excess of 75%.

LANDMATIC Heads are stationary with self-opening action designed primarily for turret lathes, featuring an unusually-large oversize capacity. Write for Bulletins F-80 and F-90.

**LANDIS** *Machine*  
**COMPANY**  
WAYNESBORO • PENNSYLVANIA

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November, 1955

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# KEMPSMITH MASTER-MILL



*The Hit of the Show  
at Chicago!*

The enthusiastic reception accorded the new Kempsmith MASTER-MILL at the Machine Tool Show is now history. Thousands of production-minded visitors witnessed the demonstration of this modern milling machine. They agreed, the Kempsmith MASTER-MILL is the finest, most efficient, most productive milling machine of its size and horsepower on the market today, regardless of price. It cuts milling costs to rock bottom by fully utilizing modern cutting tools and techniques. Conveniently located controls permit more rapid set-ups, thereby providing more cutting time. Low initial cost, plus economy of operation, assure highest return on investment. Now available in sizes No. 2 and No. 3—Plain and Universal models. For descriptive literature on these modern milling machines write:

KEMPSMITH MACHINE CO., 1827 So. 71st St. Milwaukee 14, Wis., U.S.A.

**Precision-Built MILLING MACHINES Since 1888!**

A 8501-1PCA

Encircle No. 289 on Card, Opposite Page 65

MACHINE and TOOL BLUE BOOK

U.S. central exhibits at Djakarta. Machine tools are a special interest, particularly emphasized by Dr. I. J. Kasmoro, the Indonesian Minister of Economic affairs. U.S. Government participants stress that our part in international trade affairs serves the two-fold purpose of promoting foreign trade and increasing American prestige abroad.

U.S. manufacturers and exporters are particularly advised that the principal trade fairs are held in Cypress, Ethiopia, French Morocco, Greece, South Africa, Syria, Tangiers, Tunisia and Turkey. Pamphlet 55-8 may be had from the U.S. Government Printing Office, or from any of the Department of Commerce field offices. It is entitled "International Trade Fairs and Exhibitions in the Middle East and Africa."

### Foreign Competitors

The Federal Trade Commission alerted export trade associations that price fixing arrangements with foreign competitors are no longer considered exempted by the Webb-Pomerene Export Trade Law from anti-trust considerations under the Sherman Act. This is the Commission's first policy change on foreign activities of such associations in more than thirty years.

### U.S.-European-Soviet Trade

Secretary Weeks recently reported to the President and the Congress that U.S. trade with the European-Soviet bloc appears to be rising slowly, with some indication of broadening Soviet interest in non-strategic commodities. U.S. imports from the European-Soviet bloc increased in the first quarter of

1955 to a total of \$12,746,000, rising from \$11,251,000 for the preceding quarter.

### New England Business

From New England comes word based on interviews with bankers, Chamber of Commerce officials, spokesmen for New England Council and the Connecticut Development Commission as well as individual industrialists and business men, that New England business and industry is rapidly digging out of the muck and grime of the recent flood. Most firms will reopen long before the dates originally set. Many are back in business right now. Those having the worst time are the owners of small and medium-sized businesses which were wiped out completely.





# Do you really know the alloys you buy?

For instance, are you SURE of:

- **Heat Identification** . . . not just type identification but the positive identification of your particular heat so you can be sure the alloy steel is everything it is supposed to be?
- **Chemical analysis** . . . not just the chemical range for the type, but the specific analysis of the heat from which your steel was rolled?
- **Hardenability** . . . not just the average hardenability for the type of alloy, but the actual test-proved hardenability of your particular heat of steel?

If you don't know these important facts, you may be in for trouble—loss of time and money; breakdown of equipment. It can happen when you're not sure of your alloys.

But when you work with Ryerson alloys you can be sure—sure of the steel you get, sure of what it will do—because Ryerson alloys are certified by an 8-step quality control program.

Every step has a specific purpose—every step is designed for your protection, but doesn't cost you a dime. For alloys with all questions answered, call your nearby Ryerson plant.

## RYERSON STEEL

### PRINCIPAL PRODUCTS

CARBON STEEL BARS—Hot rolled & cold finished

ALLOYS—Hot rolled, cold finished, heat treated

STAINLESS—Allegheny bars, plates, sheet, tubes, etc.

TUBING—Seamless & welded, mechanical & boiler tubes

STRUCTURALS—Channels, angles, beams, etc.

PLATES—Many types including Inland 4-Way Solder Plate

SHETS—Hot & cold rolled, many types & coatings

MACHINERY & TOOLS—for metal fabrication

JOSEPH T. RYERSON & SON, INC. PLANTS AT: NEW YORK • BOSTON • PHILADELPHIA • CHARLOTTE, N. C. • CINCINNATI • CLEVELAND  
DETROIT • PITTSBURGH • BUFFALO • CHICAGO • MILWAUKEE • ST. LOUIS • LOS ANGELES • SAN FRANCISCO • SPOKANE • SEATTLE

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MACHINE and TOOL BLUE BOOK

FEATURE ARTICLE

MTBB

NOVEMBER, 1955

## Machine Tool Show Acclaimed Great Success

ATTENDANCE predictions of the 1955 Machine Tool Show, held at Chicago, Sept. 6-17, were topped by many thousands. The National Machine Tool Builders' Association had previously reported that a gate attendance of 200,000 would be excellent,

- registrations total 102,631
- gate attendance exceeds 300,000

based upon the 1947 attendance of 170,000. This mark was passed several days





before the close of the show. Final figures revealed a gate attendance of 300,000!

In all, 102,631 machine tool users witnessed the spectacular exhibition. Many visitors came two or more times, accounting for the difference in the two totals.

"It was obvious from the opening hours of the show that the great influx of visitors was not prompted out of idle curiosity," said M. A. Hollengreen, president and general manager, Landis Tool Co., and president of the NMTBA.

"They were chiefly production executives and engineers concerned with manufacturing problems from the standpoint of costs. They were interested in specific operations and anxious to see how new machine tools could perform them faster, cheaper and better."



The total number of machine tools on exhibit reached 917. Nearly 200 railroad cars and over 1,200 trucks were needed to get the machines to the show. The total weight of all machines displayed was 8,800 tons; their value in excess of 20 million dollars. It will require the better part of a month to crate and load the machines for removal from the Amphitheatre.

Several thousand visitors from overseas compared our tools with those in other lands. The U.S. Army sent hundreds of service representatives interested in the stand-by machine tool reserve program and in latest developments of the industry.

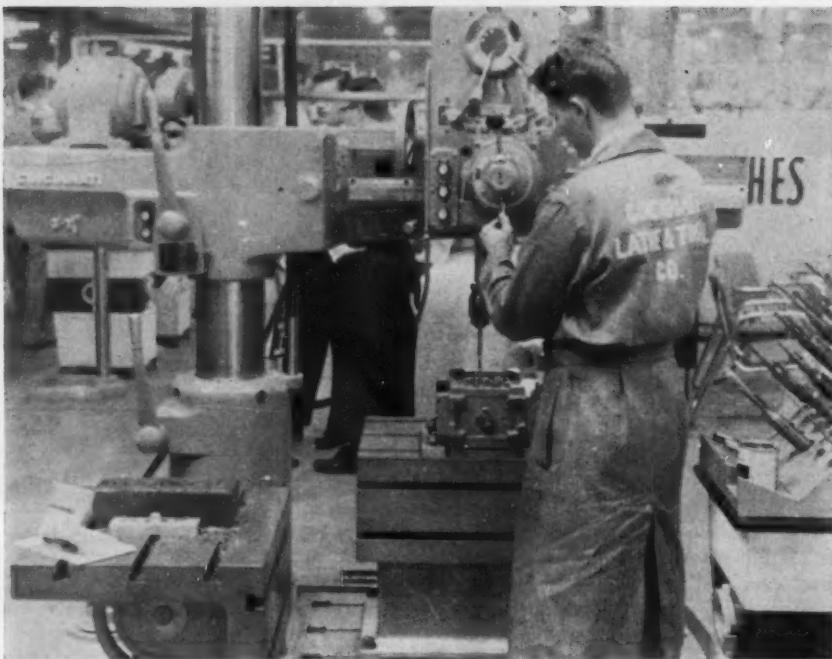
Works managers, plant superintendents, production experts, research engineers, men engaged in product development, vice-presidents in charge of operation—all came to see with their own eyes what today's new machine tool

models can do to increase productivity and profits.

Many soon realized that their plant's machine tools were seriously obsolete. Wage increases and increases in price of materials demand tools that result in more production and savings in manufacturing costs. The machine tools these executives saw demonstrated were a means to one very important end—increased profits. The wise among them went home to formulate a replacement program that would enable their companies to cash in on the advanced designs they had seen displayed.

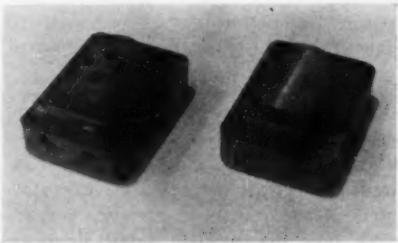
In this issue **MACHINE and TOOL BLUE BOOK** discusses some of the work being demonstrated at the show. In many cases no work was being performed on the machines and it was impossible to discuss a specific operation. In the months to come many of these machines will be reviewed in greater detail.

## Radial Drill has Flame-hardened Column



**Cincinnati Lathe and Tool Co.,  
Cincinnati, Ohio**

Featured at the Cincinnati exhibit was this outstanding new development in radial drills, claimed as the first to have a flame-hardened column. The 75 operations being demonstrated on the machine left the work part, a small cast iron pump body, looking very much like a piece of Swiss cheese, having been drilled, pipe-tapped, plug tapped, reamed, counterbored, and step-drilled by about 36 different tools, some used twice. The thick-walled, centrifugally cast column is not the only new feature of this new machine; two-lever, direct-reading, color matched spindle



speed and feed shift dials are used, and attention has been given to careful control grouping.

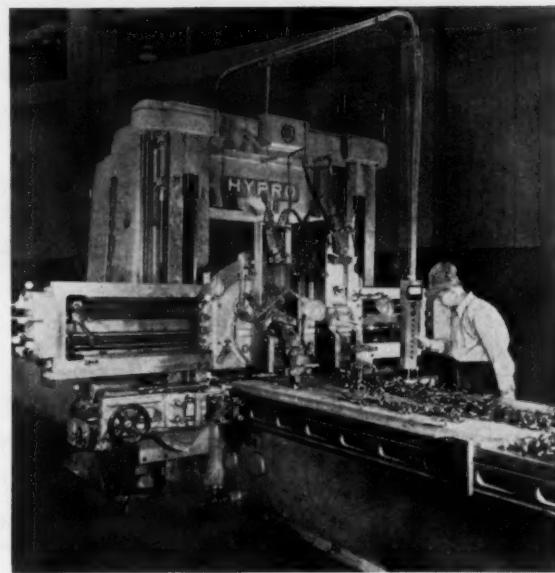
Drilling capacity is  $1\frac{1}{4}$ " in cast iron, and the machine drills to the center of a  $77$ " dia. circle.

**Machine:  $3' 7\frac{1}{2}$ " Radial Drill**

## Double Housing Planer Operates at 400 FPM

Giddings & Lewis Machine Tool Co.,  
Fond du Lac, Wis.

Among the eight new Giddings & Lewis machines displayed at the Machine Tool Show, none attracted more attention than the spectacular Hypro Double Housing Planer, which demonstrated a planing operation at 400 feet per minute. The machine itself weighs more than 85,000 pounds and has a bed 48 feet long and a 22-foot long table with 49½ inches between the housings. A large tachometer showed visitors at a glance the remarkable surface speed of the machine as it planed cast iron and steel. Outstanding features of the double housing planer include - dual saddle and slide controls, power cross feed to side heads, electric rail clamp, twin helical gear table drive, extra-high pneumatic tool



lifters for both rail and side heads, and hydraulic table stops and jacks.

**Machine:** Hypro Double Housing Planer

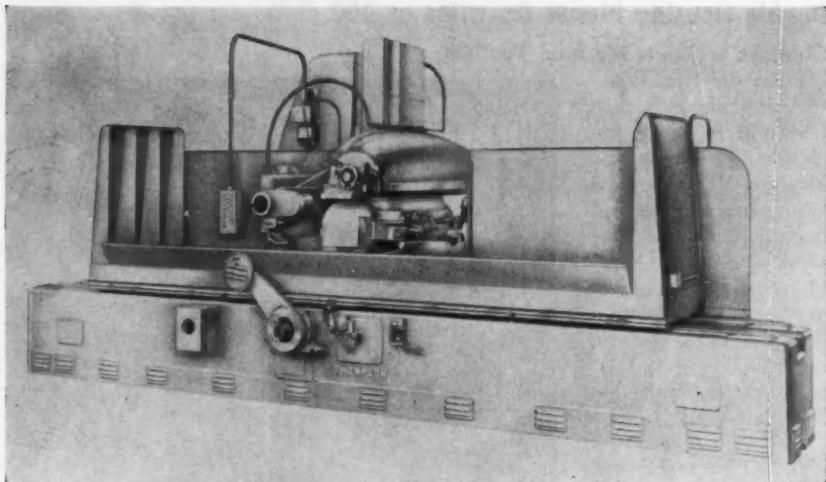
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## Double Head Way Grinder, 6" Twin Rotary Grinder

At the Thompson booth we enjoyed looking at the new double head way grinding machine, capable of grinding almost any type of machine tool way design including vees, rectangular bearings, flats, and dove-tail sections. Demonstrations were run for visitors at the booth, who were impressed by the machine's rigidity and its sensitivity. At least six machines employing the CXV's general principle have been built for domestic and foreign concerns. The

CXV features Thompson's steel-back, silver lined bearing spindle, with integral motor drive and segmental shoe thrust bearing.

Also featured at the Thompson exhibit was the new 6-inch Twin Rotary surface grinder, a high-production tool designed to eliminate the downtime of loading and unloading the usual surface grinder. This model has been in use in the automotive field for the past 12 months. The machine employs two



worktables with 180° automatic indexing cycle, and the complete cycle of setting the cut, contacting the work-piece, grinding to size, and spark-out

is accomplished automatically.

**Machines:** Double Head Way Grinder, 6" Twin Rotary Grinder.

### Cam-Driven Unit Drills and Taps

Morris Machine Tool Co.,  
Cincinnati, Ohio

At the Morris booth they were showing, along with their production machines and Air-Oil-Matic drill units, this automatic, electrically controlled, cam-driven unit designed for drilling, tapping, and allied operation. These dependable units find many applications in high production work, where they may be mounted horizontally, angularly, or vertically. A calibrated dial selects the thrust desired for drilling through a rheostat and electric clutch. Rigid



quill construction is featured, and frontal quill support eliminates danger of hangdown. The cycle of drilling operations is electrically controlled. The electric clutch employed simplifies construction and eliminates need for shear pins, besides providing slippage when excessive thrust is required, preventing damage to workpiece or unit and detecting broken or worn drills automatically.

Demonstrated at the Show was this drilling operation:

**Part:** 1" Plate

**Material:** Cast Iron

**Operation:** Drill 1" dia. hole through plate

**Speed:** 306 rpm

**Feed:** .014" per rev.

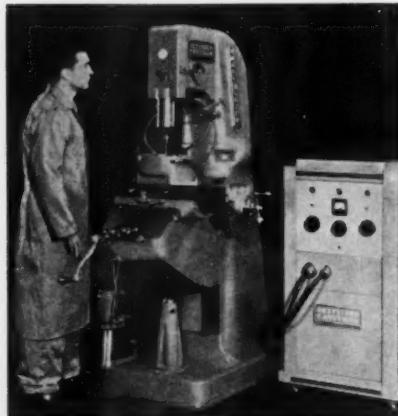
**Complete Cycle Time:** 23 seconds

**Machine:** No. 2 Cam-matic Drill Unit

## Cutting Intricate Shapes in Diamonite

**The Sheffield Corp., Dayton, Ohio**

Widespread interest in this machine made it one of the top attractions at the Sheffield booth. The Cavitron is



November, 1955

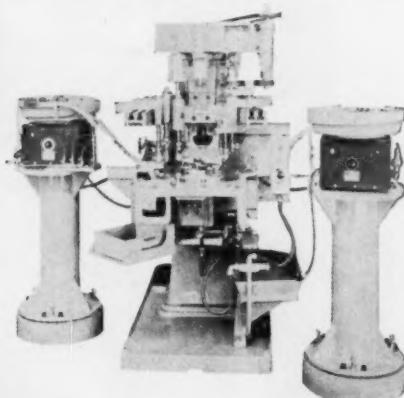
used to cut, drill, emboss or transfer simple or intricate designs and shapes into and through hard, brittle metals and materials such as carbides and ceramics. Actual machining is accomplished by a cutting tool of the desired shape or form reciprocating at ultrasonic speeds and driving an abrasive grit solution against the workpiece, chiseling away very fine particles to produce the desired shape. At the Show, the Cavitron demonstrated the cutting of an intricate shape through a small disc of diamonite (ceramic-bonded aluminum oxide composition), using a tool of stainless steel driven at 20,000 vibrations per second.

**Machine:** Model 1000W Cavitron Ultrasonic Machine Tool

## Plastic Battery Caps Assembled Automatically

**The Bodine Corp., Bridgeport, Conn.**

Among the new Bodine equipment displayed at the Show, this dial-type automatic machine was tooled in conjunction with two hoppers equipped with transfer devices to carry parts to the indexing dial, making the machine a completely automatic assembly unit



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for plastic battery caps. Parts are two halves of a battery cap. The lower half is fed to a dial where a single drilling spindle insures that no flash remains in the vent hole. A suitable solvent is then applied to the joint surface, softening the plastic sufficiently to make it adhere to the upper half as it is fed

to the assembly and pressed into position.

Finished cap assemblies are automatically ejected at the rate of 30 pieces per minute.

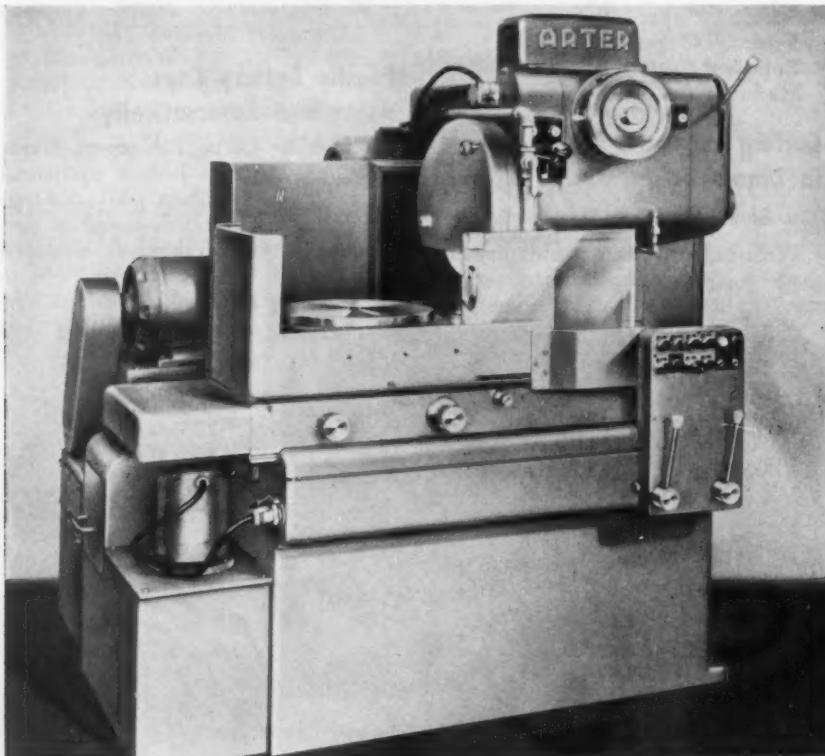
**Machine:** Model 41-20 Drilling & Assembling Machine

## Completely Automatic Operating Cycles in Arter Grinder

**Arter Grinding Machine Co.,**  
**Worcester, Mass.**

The big attraction at the Arter booth, of course, was the remarkable new "Jigmatic" tape controlled automatic

digital positioning table, which we hope to cover fully in future articles. However, Arter was also featuring several fine new grinding machines, among them the Model E - 16" Surface



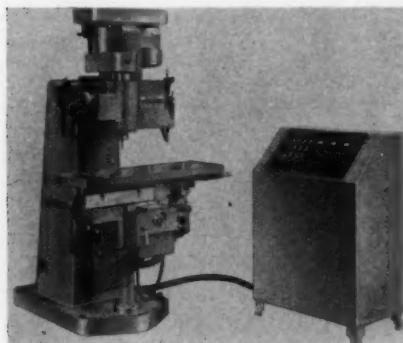
Grinder, a vertical column type machine mounting a rotatable magnetic chuck. Precision taper roller bearings are used in the wheel spindle; a concentric line pattern of finish is produced on the work. Concave or convex surfaces can be generated by tilting the chuck, which is available in two sizes, 12" and 16". The table, hydraulically operated, is reversed by means of micro-switches. Completely automatic operating cycles are possible with this machine, including rapid table advance, table reciprocation, coarse wheel feed for roughing, fine feed and spark-out for finishing, and automatic retraction. Machine controls are placed well for operator convenience.

**Machine:** Model E-16" Hydraulic Rotary Surface Grinder.

### Tracer Control System Reproduces 3-Dimensional Models

**Pratt & Whitney, Div. Niles-Bement-Pond Co., West Hartford, Conn.**

The 9" x 12" capacity Velvtrace machine was introduced by Pratt & Whitney at the Show, and was demonstrated in typical applications at the company's booth. Capable of reproducing 3-dimensional models within its size range with extreme accuracy, the



November, 1955

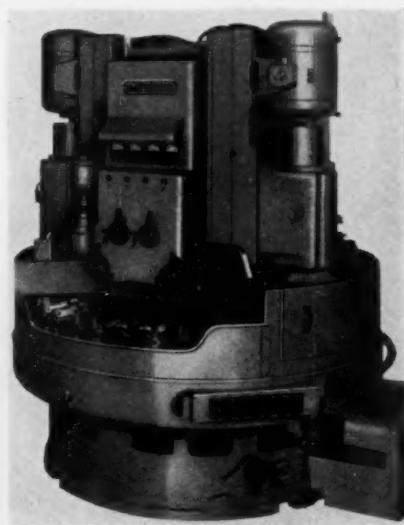
Velvtrace employs a unique tracer control system, one that is relatively simple. The machine utilizes a minute spark gap of high voltage, low amperage current between tracer and model, so that there is no actual contact between the two, and no mechanical deflection or motion is in the tracer. The variations in the spark gap produce proportional changes in the voltage across the gap, which when amplified electronically is used to control the magnetic clutches which drive the spindle quill and the transverse or longitudinal motions of the table. Operation of the machine is completely automatic, with options of normal table traverse or cross-slide traverse.

**Machine:** "Velvtrace" Duplicating Milling Machine.

### Grinding Sides of Automotive Connecting Rods and Caps

**Mattison Machine Works, Rockford, Ill.**

A highlight of the display down at



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the Mattison booth was their No. 72 grinder, which was tooled and operating, grinding the sides of automotive connecting rods and caps. The machine accomplishes automatic single-pass grinding, the operator being required only to load and unload parts from the clamping fixtures as they move past actuating cams.

Automatic compensation is provided

to allow for wheel wear, working through the use of sizing gages to maintain parts to manufacturing limits. Powered for high stock removal, the machine uses self-dressing wheels and rough grinds two sides of rods and caps at the rate of 375 pieces per hour.

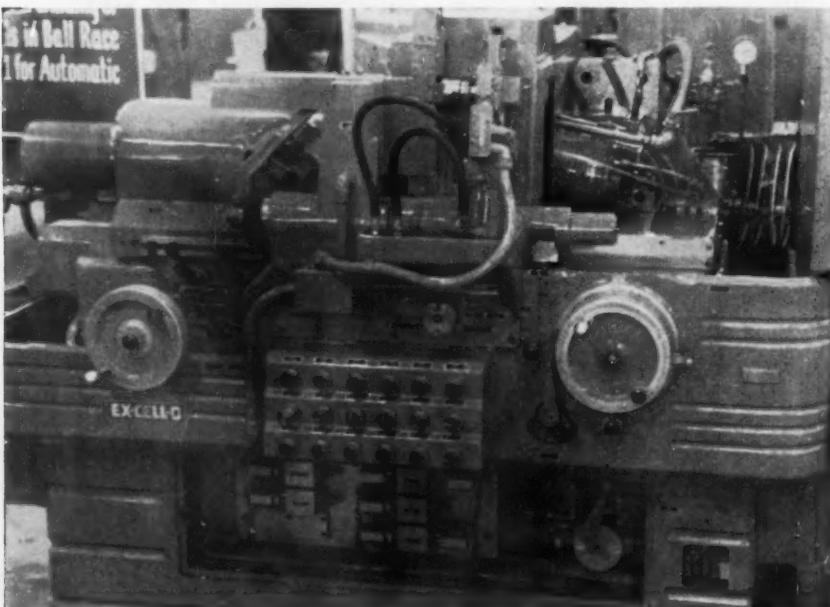
**Machine:** No. 72 Four-Spindle Rotatory Automatic Grinder

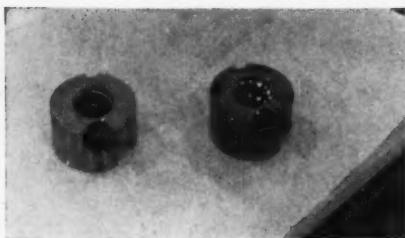
## Internal Thread Grinder is Automatic

Ex-Cell-O Corp., Detroit, Mich.

Designed for high-volume production grinding of internal threaded parts, this interesting machine is one of nine styles in the Ex-Cell-O line used for precision thread grinding. Style 39-A permits automatic grinding of a maximum hole diameter of  $9\frac{1}{2}$ " and a minimum of 1", with maximum

thread length of 5" anywhere within a distance of 2" to  $15\frac{1}{2}$ " from the nose of the work spindle. Operating controls are well located at the front of the machine. Pre-set automatic controls permit any arrangement between rapid and feed movement to suit the individual workpiece, and adjustments may





be made so that the wheel may grind in both directions through the work. A master lead screw, with hardened and precision ground threads, closely fitted to a bronze nut that is split to

allow adjustment after wear, drives the worktable in both directions.

You saw the 39-A at the Show grinding a pre-cut ball groove in a Saginaw steering gear ball nut, with pertinent data as follows:

**Part:** Steering gear ball nut

**Material:** 5120 steel

**Operation:** Grind a pre-cut ball groove (internal)

**Stock Removed:** .036"

**Gross Production:** 72 pieces per hour

**Wheel Dressing:** After every piece

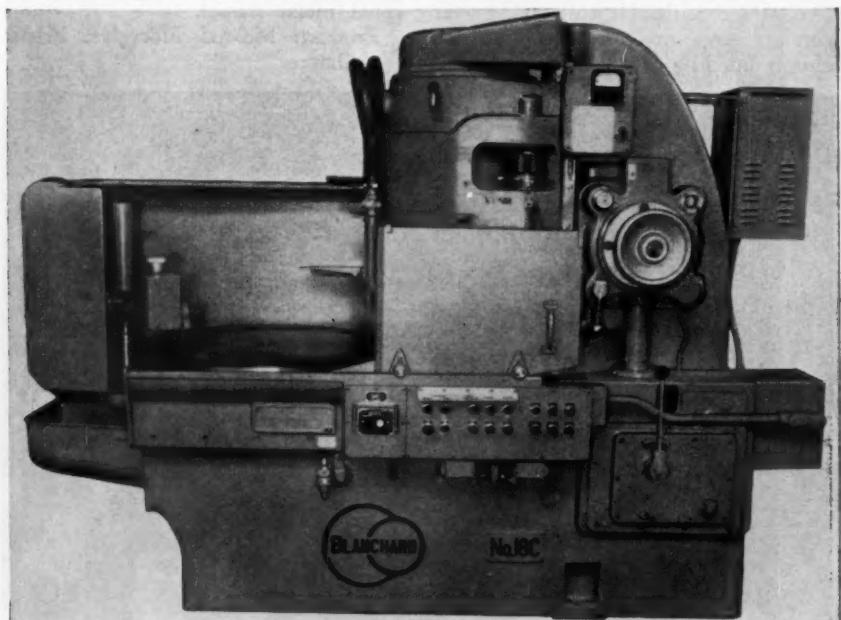
**Machine:** Style 39-A Precision Internal Thread Grinder

### Designed for Automatic Cycle of Manual Operation

The Blanchard Machine Co.,  
Cambridge, Mass.

Designed for either automatic cycle or manual operation, the 18-C grinder

was an important display at the Blanchard booth. Where loading and grinding times on two operations are nearly equal, one operator can easily run two



of these machines at a time, using the automatic cycle control. The automatic cycle accomplishes the following: (1) Moves chuck to grinding position and starts it rotating, (2) Starts wheel and coolant pump, bringing wheel to work with rapid approach, (3) Engages power downfeed at preset rate, changing to fine feed just as finished size is reached, (4) Stops feed when work is to size, raises wheel head, (5) Stops wheel, coolant pump and chuck, moves chuck to loading position and demagnetizes it.

A typical job run recently on the No. 18-C is described below:

**Work:** Valve plate, 4" dia., .500" thick

**Material:** Cast iron

**Operation:** Grind both faces

**Stock Removal:** .012" per side

**Pieces Per Load:** 50

**Production:** 225 pieces - 450 surfaces per hour

**Machine:** No. 18-C Blanchard Surface Grinder

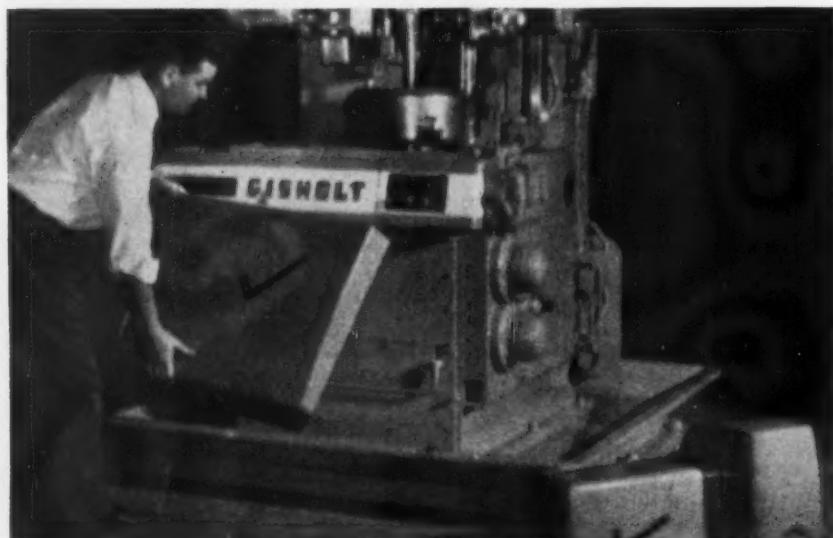
## Plastic Panels, Dials, Guards

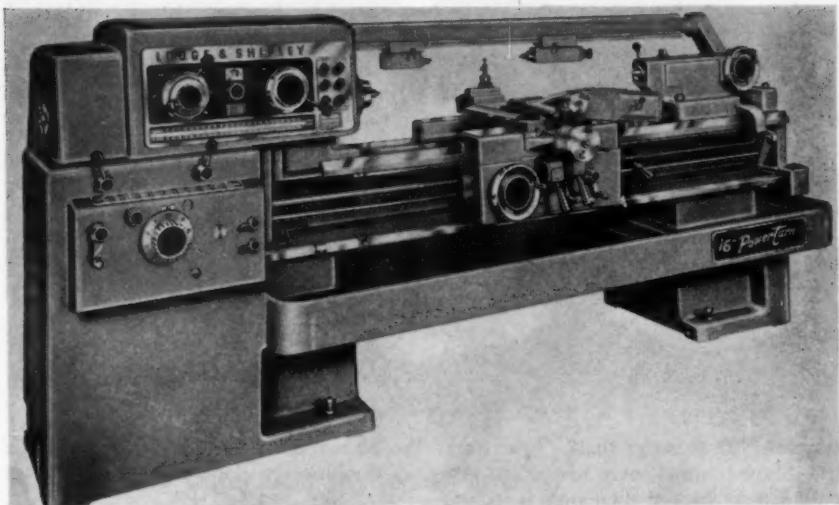
### Gisholt Machine Co., Madison, Wis.

As a unique service to the machine tool industry, Gisholt Machine Company, Madison, Wis., offers to supply molded fiberglass plastic shapes, such as panels, dials, covers, guards and the like, at a considerable cost saving over similar items made of cast iron or aluminum. Engineered by Gisholt and

carried through to completion in their plant, the plastic shapes are said to be machineable; self-extinguishing; chemically resistant to oils, acids, and most solvents; dimensionally stable; and less expensive than most comparable fabricated metal shapes.

**Product:** Molded Fiberglass Plastic Shapes





## Lathe has New Tracing Mechanism, Template Support

Lodge & Shipley Co., Cincinnati, Ohio

The totally new 45° Copymatic lathe was a high-light of the 10-machine Lodge & Shipley display. Manufactured in six models and sizes, the Show machine was a 16" Powerturn 45° Copymatic Toolmaker model, and attracted much attention from production lathe operators. The Copymatic has a completely new tracing mechanism and template support, the tracing stylus be-

ing base-mounted to simplify work loading. Provision is made for the use of either round or flat templates. All control is given to the hydraulic cylinder which operates the tool slide, and the carriage operates at a constant speed for additional sensitivity.

The Show demonstrator was shown contour turning a stepped shaft.

**Machine: 45° Copymatic Lathe**

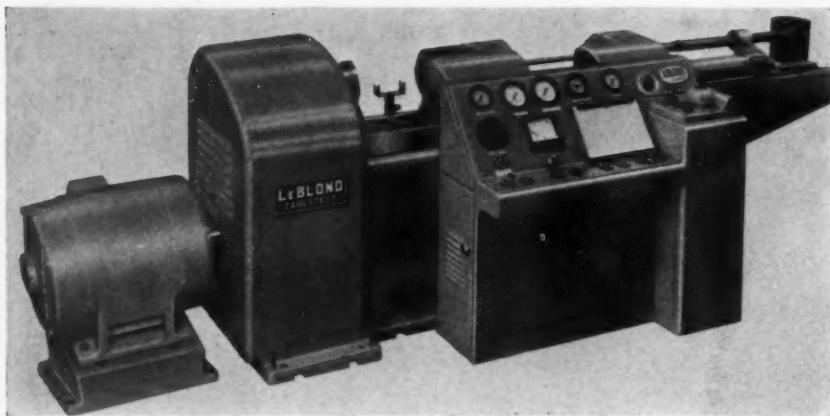
## Rapid Borer Operates at 7" Per Minute

The R. K. LeBlond Machine Tool Co., Cincinnati, Ohio

Interesting among the new equipment at LeBlond's booth was the new rapid borer, which the company claims will bore, trepan, or counterbore from 3 to 8 times faster than by conventional D-bit method. The rapid borer was developed to accommodate new tooling which cuts at high speed with excellent accuracy and finish. Cutting oil is

forced between the boring bar and hole wall, forming a continuous bearing. It flushes back through a hole in the boring head and bar, carrying the chips with it. Chip form is carefully controlled by tool angles and speed-feed combination to keep tool faces clean and chip passage clear.

The Show demonstration included boring  $1\frac{1}{8}$ " holes in 8"-long solid



stainless 303 at better than 7" per minute. Show visitors were invited to prepare sample bars of their own materials

to be bored on the Rapid Borer.

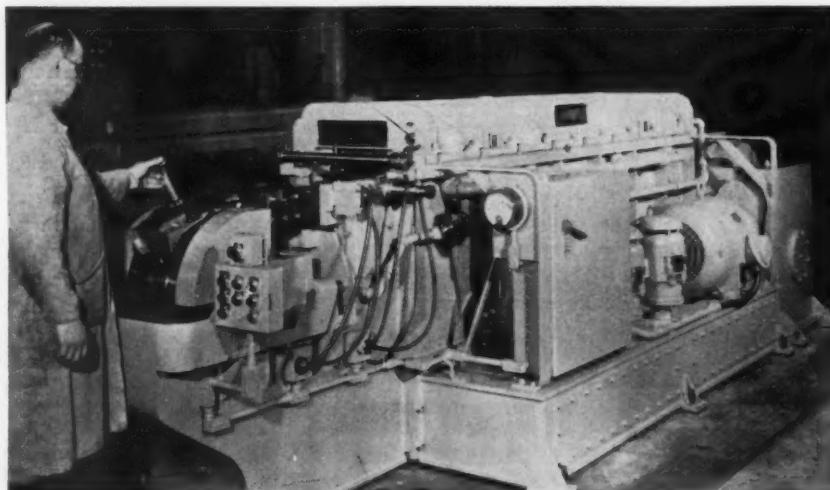
**Machine:** LeBlond - Carlstedt Rapid Borer

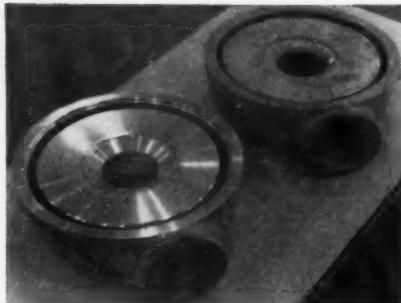
### Connecting Rods Machined at Rate of 1300 Parts Per Hour

**The Lapointe Machine Tool Co.,  
Hudson, Mass.**

Among the interesting exhibits at

the Lapointe booth, the 120" continuous broaching machine was considered one of the more outstanding, as it demonstrated a very high production





rate on automotive connecting rods. Mounting 24 part-holding fixtures, the machine achieves a production rate of



1300 parts per hour.

**Machine:** 120" Continuous Broaching Machine

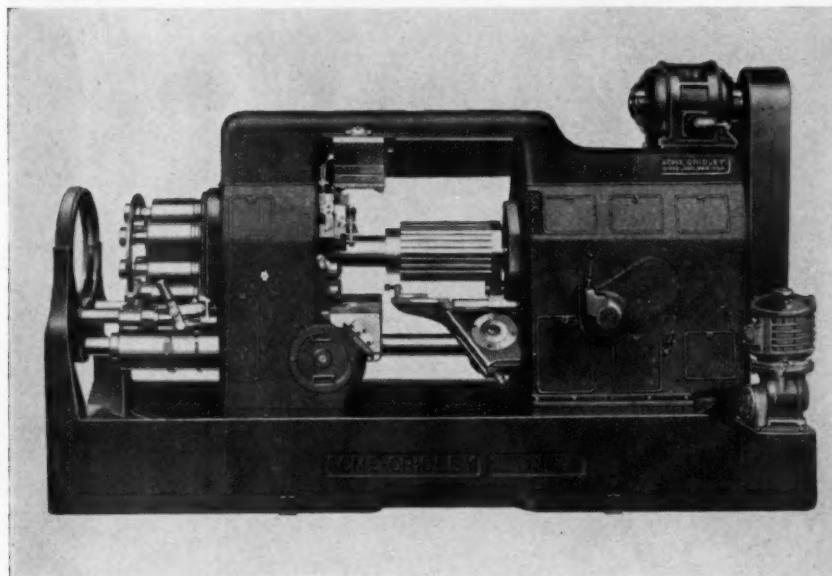
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## Automatic Bar Machine Produces 340 Outer Bearing Races Per Hour

**The National Acme Co.,  
Cleveland, Ohio**

The most spectacular of the displays at the Acme booth was this brand new

eight-spindle automatic bar machine which the company says is the world's largest-capacity production machine of its type. At the Show the RB-8, using



carbide tooling throughout, was producing 3.560" O.D. outer bearing races at the prodigious rate of 340 pieces per hour gross production. You could always count on finding a large crowd around the machine.

Other interesting data on the demonstration operation should be of interest to you.

**Part:** Bearing Race (produced 2-at-

a-time)

**Material:** 52100 Bearing Steel

**Overall Dimensions:** 3.560" x .916"  
long

**Spindle Speed:** 430 rpm (giving 402  
sfm)

**Machine Time:** 21 sec.

**Gross Production:** 340 pieces per hour

**Machine:** 4-inch RB-8 Acme-Gridley  
Bar Automatic

## Milling and Centering Machine

**The Motch & Merryweather Machinery  
Co., Cleveland, Ohio**

Designed to meet the high production needs of modern tracer-controlled and automatic lathes, this machine mills and centers turning blanks at high production rates. It can be set up for change-over of both length and diameter quickly, thus serving many sizes

of production machines. The machine has three stations, one for loading and unloading, the second for milling both ends with duplex heads. At the third station double-end center drilling takes place.

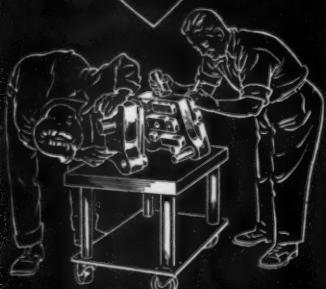
The Show demonstration is summarized below.

**Work:** 2 $\frac{1}{4}$ " x 14" Shaft Blanks



**do you  
WASTE MONEY  
RISK ACCIDENT  
doing things the  
HARD WAY?**

*Take* a trip through  
your plant today and note how  
many assembly and  
maintenance operations are  
being done in awkward  
or tiresome  
positions.



*Imagine*

THEM BEING DONE ON

**PORTELVATOR**

THE MANDY HAMILTON PORTABLE ELEVATING TABLE

With Portelvator hundreds of assembly and  
maintenance jobs are accomplished at  
the right height and in the best light.

And that means money in the bank  
and workmen on the job; faster  
work and fewer accidents.

Portelvator prices start at \$155.00—  
place a couple at your workmen's  
disposal and watch results.

*Complete* description in  
FREE Bulletin No. P-5403.

**WRITE FOR IT!**

Address The Hamilton Tool Company,  
826 South Ninth Street, Hamilton, Ohio



Encircle No. 291 on Card, Opposite Page 65

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**Material:** 40 carbon steel heat treated to 32-34 Rockwell C

**Operation:** Mill End Faces, Center Drill Ends

**Speed:** 243 sfm

**Tool:** 8" dia. 30 tooth carbide cutter

**Cycle Time:** 18 seconds

**Net Production:** 180 pieces per hour

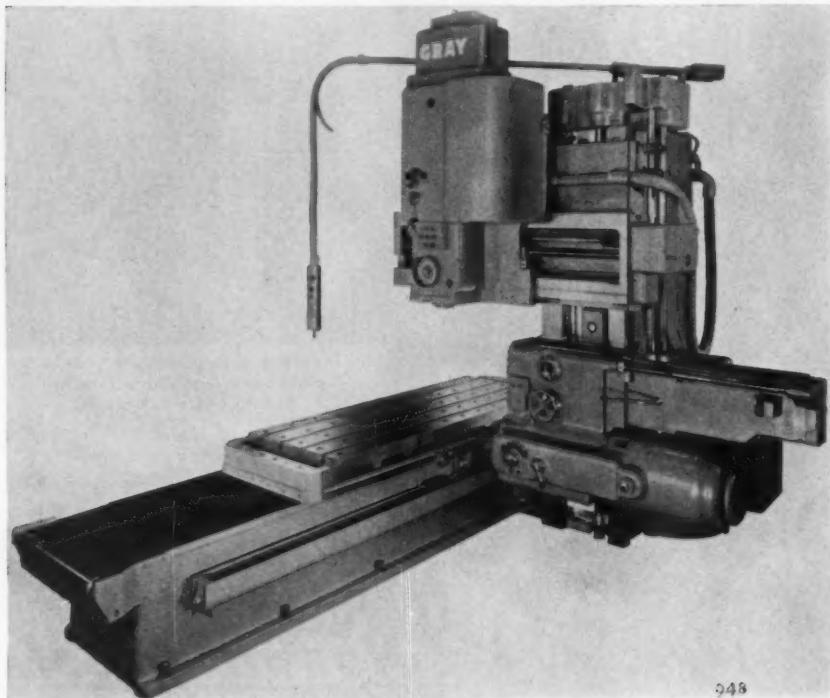
**Machine:** Model 3-MCT Heavy Duty Universal Production Milling & Centering Machine

## Planer Cuts on Forward and Reverse Stroke

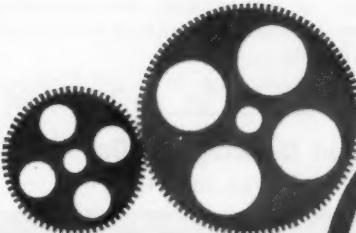
The G. A. Gray Co., Cincinnati, Ohio

One of the most effective displays in the Show was the Gray demonstration of this new planer which cuts on forward and reverse stroke and is capable

of heavy feeds. A "triple cut" feature is also possible, to permit finish planing while the machine makes its two-way rough cuts. Light occasional cross cutting of keyways and the like is also pos-



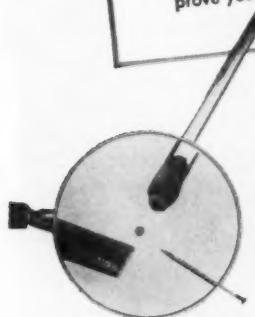
948



# PRECISION GEARS

**YOU** who use small gears, (to 6" O.D. of the gear blank) can improve the performance of your product, through increased gear precision, without sacrifice of gear production.

**YOU** who use small, fine pitch, precision gears can increase your gear production without sacrifice of gear accuracy, or improve your gear accuracy without sacrifice of gear production.



The Hamilton Precision Gear Hobber, the hobber with a "reserve of accuracy," regularly holds work spindle and hob spindle runout to less than .0002", workspindle and tailstock spindle alignment to less than .0002", and this workmanship is maintained throughout the machine.



**WANT FACTS?**

Write for Bulletin No. 5419.  
Address The Hamilton Tool Company  
826 South Ninth Street,  
Hamilton, Ohio



IT'S A  
**Hamilton Tool**  
USE IT WITH CONFIDENCE

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sible. In demonstration planing at the Show, standard carbide tips held in simple holders were used, to show that special tools are not required. A variety

of cuts on different materials were demonstrated to Show visitors on the new planer.

Machine: 36" x 10" Universal Planer

## Draw Press Produces Hat-Section Drawings in One Hit

The Cleveland Crane & Engineering Co., Wickcliffe, Ohio

One of the most interesting demonstrations we saw at the Show was the operation of Cleveland Crane's new draw press as it produced hat-section drawings in one hit of the press with an exceptionally high 54% ratio of draw reduction to blank size. The newly incorporated toggle linkage of this press gives a fast return of the slide, permitting a high number of strokes per minute. The press mounts a die cushion with 35 ton capacity at 100 pounds air pressure. The design of the press makes available 110 tons of pressure at mid-stroke and correspondingly high tonnages throughout the stroke, which is greater than that available in standard-crank machines.

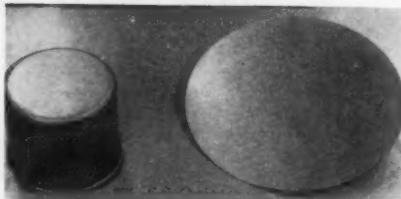
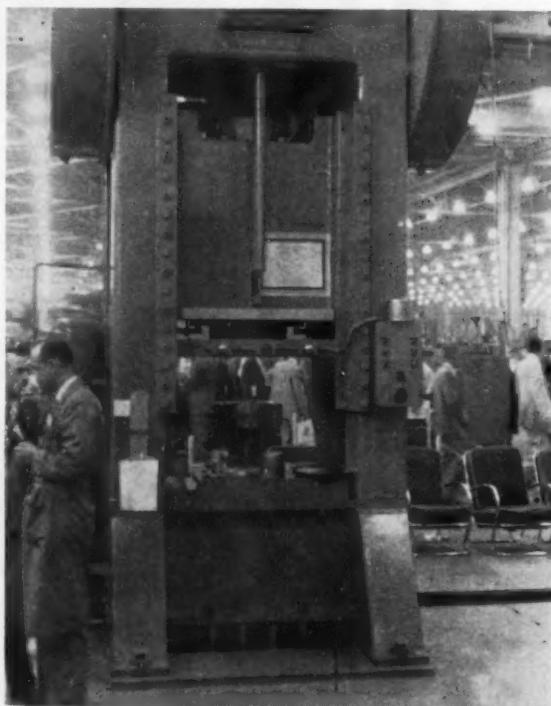
You may be interested in more data on the Show demonstration:

**Part:** Hat Section, 5-1/8" deep, 5-3/8" dia.

**Material:** 12" dia. 20 gauge draw-quality steel

**Operation:** Draw hat section from circular blank

**Draw Speed:** 55 feet per minute



Machine: 215 Ton Steelweld Draw Press

HAMILTON



# Varimatic®

SUPER SENSITIVE  
VARIABLE SPEED • SMALL HOLE  
PRECISION

## drilling machine

SINGLE OR  
MULTIPLE SPINDLES

to drill holes (.004" to 5/16") in  
all drillable materials, to the most  
exacting specifications and on the most  
relentless production schedules.

Get prices and specifications without obligation.

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Address The Hamilton Tool Company

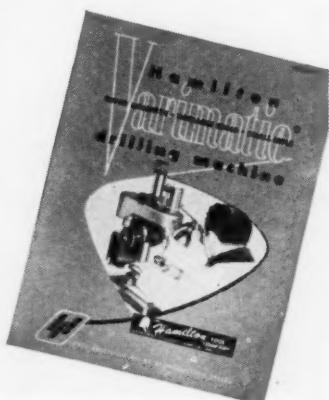
826 South Ninth Street

Hamilton, Ohio

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**Hamilton Tool**  
USE IT WITH CONFIDENCE

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November, 1955

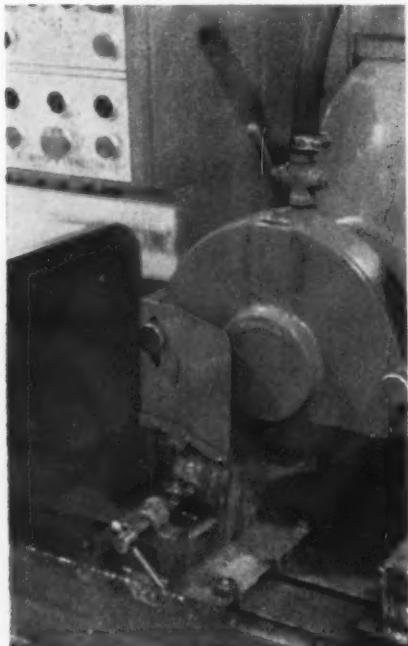


## Electrolytic Grinding

Gallmeyer & Livingston Co.,  
Grand Rapids, Mich.

Featured at the Gallmeyer & Livingston booth was this surface grinder equipped with an electrolytic grinding unit and electronically controlled power pack developed by Anocut Engineering Co.\* Utilizing the principles of electrolysis between the grinding wheel and the work, material is removed by electro-chemical dissolving which permits operations on hard-to-machine parts such as aluminum honeycomb. Great increases in diamond-wheel life are claimed.

One impressive demonstration performed by this machine was on a piece of 370 carbide.



**Workpiece:** 370 carbide demonstration piece

**Operation:** Remove material .050" x .200" x .750" in one pass

**Wheel Used:** 10" metal bond diamond wheel

**Wheel Speed:** 2100 rpm

**Time Required:** 8 seconds

**Finish Obtained:** 6 microinches

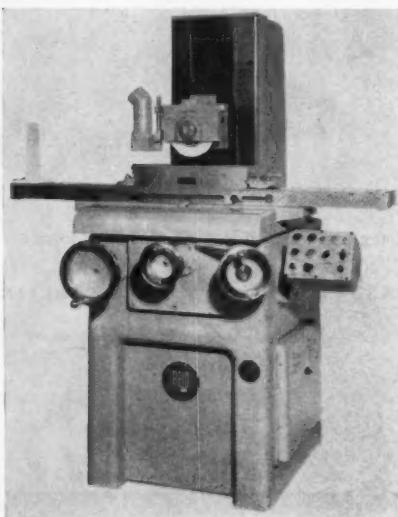
**Grinder Power Consumption:** Approx. 1.6 KVA (unit rated at 3 KVA)

**Machine:** Anocut Electrolytic Grinder  
Mounted on Grand Rapids Surface Grinder

## Automatic Push-Button Surface Grinder

Reid Brothers Co., Inc.,  
Beverly, Mass.

Up at the Reid Bros. booth this new fully electric powered, push-button automatic 6" x 18" grinder attracted considerable interest. It was pointed





Every practical shape  
and size

...plus every practical  
degree of fineness  
(00 to 6)...plus

the craftsmanship  
of specialists  
in

Swiss Pattern  
file cutting exclusively...

...THESE MAKE NICHOLSON X.F. (EXTRA FINE)  
THE LARGEST-SELLING BRAND OF  
ITS KIND IN AMERICA

Toward achieving accuracy in precision work, the first rule of the tool, die, model and fine-instrument crafts is to use files which in themselves are precisely made, carefully hardened, uniformly correct and efficient.

*Individual types include:* Knife, Round Straight, Half Round, Metal Saw, Square, Pillar Narrow, Three Square,

Equaling, Round Tapered, Hand, Warding, Crochet, Barrette, Slitting, Crossing, Joint, Pippin, Testing.

*Group assortments:* Die Sinkers, Die Sinkers Rifflers, Bench Filing Machine, Broach; Round and Square Handle Needle (in 1-dozen plastic-case assortments if desired).

*Consult and buy from your Industrial Distributor*



NICHOLSON FILE CO., 16 Acorn St., Providence 1, R. I.  
(In Canada: Nicholson File Company of Canada Ltd., Port Hope, Ontario)



**NICHOLSON FILES FOR EVERY PURPOSE**

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out that the 618-PF's very heavy construction, together with a high degree of automaticity, makes it suitable for production or toolroom use. Table speed and cross-feed drive are dial controlled, and the control panel features push-button controls for power rapid traverse of the cross-feed, rapid power elevating head, and automatic cycling of the cross-feed. Automatic continuous lubrication to every important point of the machine is provided.

The Reid folks were showing a beautiful finish obtained on their demonstration workpiece.

**Work:** Billet Stock

**Material:** Case hardened machinery steel

**Wheel Used:** 7" A46-H8-V

**Spindle Speed:** 3600 rpm

**Finish Obtained:** 4 to 6 microinch

**Machine:** Model 618-PF Surface Grinder

## Pre-Selector and Programming Systems Speed Hole Drilling

The Carlton Machine Tool Co.,  
Cincinnati, Ohio

Big news at the Carlton booth were the new Carlton-Leber speed-feed pre-selector and programming systems designed for faster, more economical hole drilling production. Here's how the programming works, as demonstrated on several Carlton machines at the Show: From a chart prepared by the production engineering department which shows desired sequence, speeds and feeds to be used in drilling operations on a particular workpiece, the speeds and feeds required are set on



the programming console dials. The operator is then free to concentrate on starting and stopping the spindle, and changing cutting tools. For less lengthy or complicated drilling operations the programming unit can be disconnected and the pre-selector becomes operative, enabling the operator to select the speed and feed for the next operation while the machine is under cut. Carlton radial drills are available with manual feed-speed controls, with pre-select gear shift only, or with pre-selector and programming system combined.

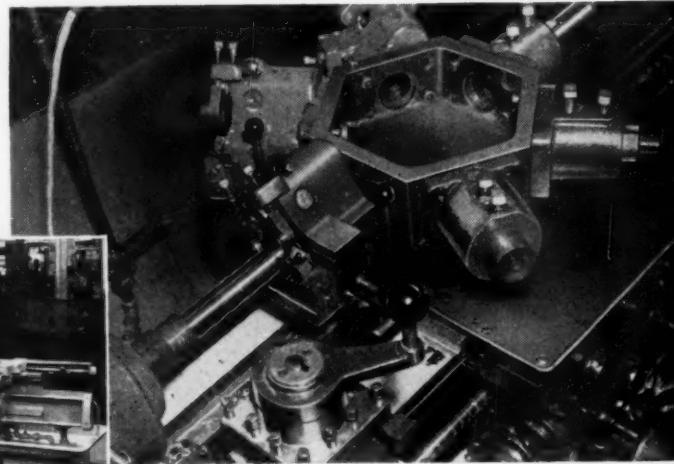
**Machine:** Programming and Pre-Select Device for Radial Drill 4A - 6' 19"



take shaft jobs  
**Like This:**

they take less time on  
**GISHOLT TURRET LATHES**

*Yes, even in lots as small as 5 or 10 parts, you can't beat turret lathes on this kind of work. Parts are machined complete in 2 operations—total time is less than 4 min.*



**no extra equipment needed!**



**THE GISHOLT ROUND TABLE**  
represents the collective experience of specialists in the machining, surface-finishing and balancing of round and partly round parts. Your problems are welcomed here.

**TURRET LATHES • AUTOMATIC LATHES**

**SUPERFINISHERS • BALANCERS**

**SPECIAL MACHINES**

With no more than your standard bar equipment, you're all set to cut machining costs on shafts like these. No previous operations . . . such as cutting to length or centering . . . are necessary. And with *two or more tools* from turret and side carriage, you have the basic advantage of turret lathe economy—the time saving that means lower costs.

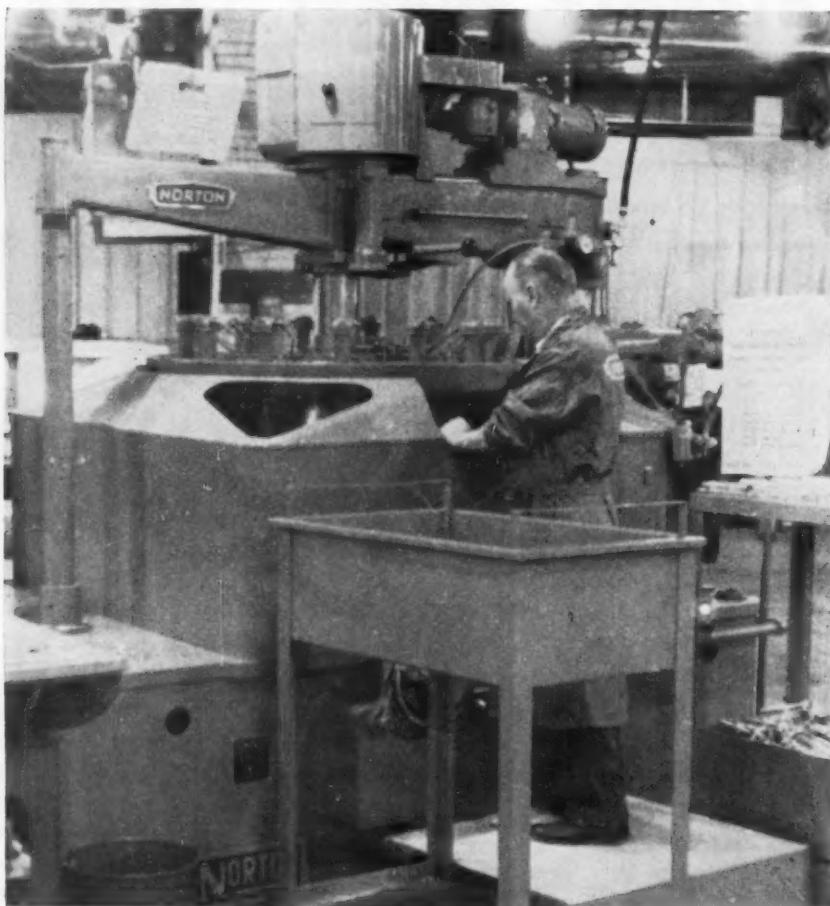
Before you turn to extra equipment or special attachments, look into the possibilities of doing the job the quick and easy way on Gisholt Turret Lathes. Gisholt engineers will gladly help you.

**GISHOLT • MACHINE COMPANY**  
MADISON 10, WISCONSIN

## Lapping Aluminum Valve Bodies

The Norton Co., Worcester, Mass.

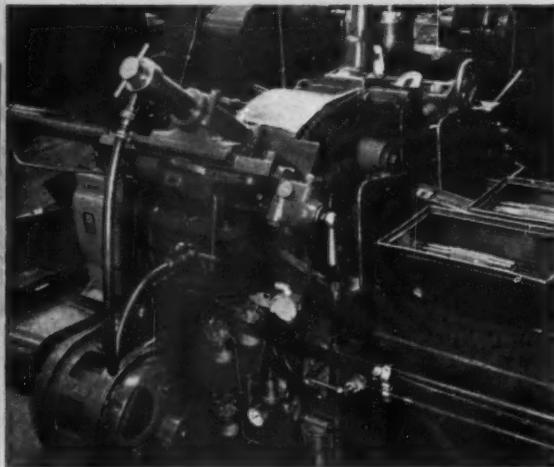
Exhibited at Norton's booth 516, the 48F Hyprolap is available for single or parallel face flat lapping operations in three cycle arrangements. Plain timed cycle, automatic continuous feed, or semi-automatic continuous feed. 48" diameter bonded abrasive wheels are



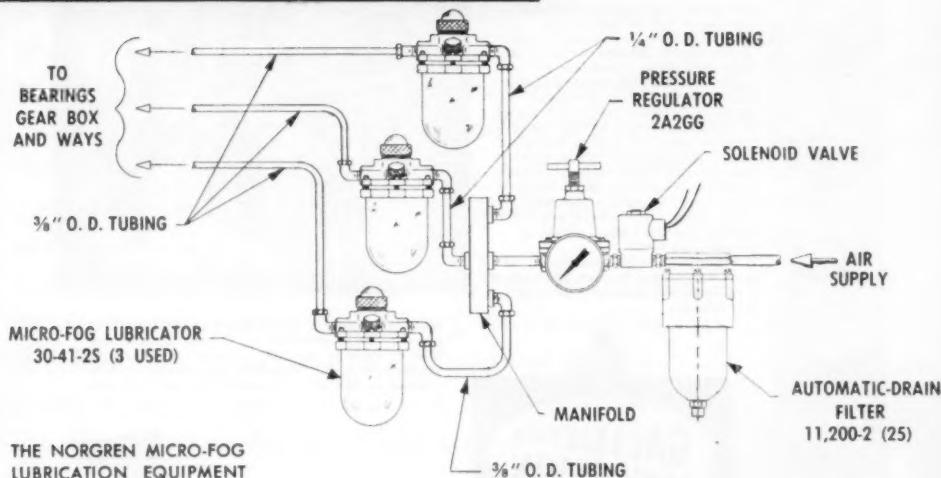
# Norgren

## MICRO-FOG

completely lubricates centerless grinder with  
only 12 drops of oil per minute



Here's another typical example of how Norgren Micro-Fog provides more efficient, automatic lubrication with minimum costs. Micro-Fog, replacing a pump recirculating system on the centerless grinder, uses only 12 drops of oil per minute to lubricate the drive bearings, thrust bearings on wheel spindle, journal bearings, gear change box, journal and thrust bearings on back up wheel, and two sets of ways. A unique system of chevron grooving in drive shaft bearing aids in Micro-Fog distribution.



For complete details on this Micro-Fog application  
write for Blueprint MF15 or phone the Norgren  
representative listed in your telephone directory  
classified section under Norgren Pneumatic Products.

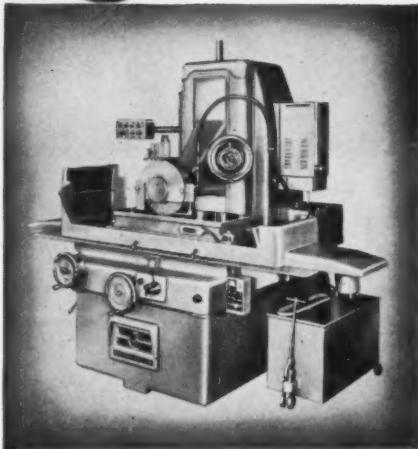


FOUND WHERE WORLD FAMOUS TRACTORS ARE "BORN"

## GRAND RAPIDS GRINDERS



The makers of these famous tractors and allied heavy-duty equipment use Grand Rapids Grinders in their toolrooms. In fact, you'll find Grand Rapids Grinders wherever manufacturers place a premium on precision... because they're designed and built for lifetime precision grinding. Take our Model 560, shown at right. Its column and base are a massive, one-piece casting for permanent, rigid alignment. Wheel head has powered rapid vertical travel; cross feed and longitudinal travel table are hydraulically actuated. Table speed is variable up to 140 fpm, making this the **fastest** grinder of its type and size! If you're not already enjoying these standout features in your toolroom, a note on your letterhead will bring full details.



Grand Rapids No. 560 Hydraulic Feed Surface Grinder. Table speed up to 140 fpm. Working surface of table is 14" x 36". Vertical movement of wheel head is 18". Preloaded ball bearing spindle greased for life. Spindle speeds 1800 and 2140 rpm.



GALLMEYER & LIVINGSTON CO.

405 STRAIGHT AVE., S.W. GRAND RAPIDS, MICHIGAN

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MACHINE and TOOL BLUE BOOK

Write for full information.



# Decision at **SPS**

STANDARD PRESSED STEEL CO.  
JENKINTOWN, PENNA.



A moment of decision . . . after months of trial, weeks of conference . . .

It's ADAMAS . . . again . . . and it's no surprise that Adamas tungsten carbide is specified at SPS . . . for Adamas tungsten carbide products are subject to the world's most rigid set of quality control procedures.

Careful selection of materials lies at the heart of quality control at SPS. And, at SPS, where carbide is called upon for use in a great variety of applications, Adamas tungsten carbide is a logical choice . . . for there's an Adamas carbide grade for every job.

Standard Pressed Steel Company of Jenkintown, Pennsylvania is the world's largest manufacturer of Socket Screw Products, Cap Screws, Set Screws and a variety of other threaded fasteners. These SPS products are used on aircraft, home appliances, business machines, in fact, wherever products or components must be held together.

A continuing program of research and development at SPS assures a lasting place for the Company in America's future.

**ADAMAS CARBIDE CORPORATION  
KENILWORTH, NEW JERSEY**



# JOB SHOPS

## TAKE NOTE!

303 Stainless Steel—  
All finishes held to 16 RMS or better

LEE ENGINEERING CO.,  
BALTIMORE,  
TOOK THIS ORDNANCE JOB  
ON SUB-CONTRACT.

"Job shops" might well be called "tough-job shops". Specifications must be "on the nose", bids must be low, and still there must be a profit. It calls for smart management plus good equipment.

Consider this case. It was a tough job, but the winning bid was made with confidence. Lee knew that this job would be "duck soup" for their new J&L Ram Type Turret Lathe . . . All production commitments were met with ease — just another example of a "job shop" operation made *profitable* through the use of the versatile Jones & Lamson Universal Turret Lathe.

*The piece is machined in two operations on the same lathe without tooling changes.*



Send today for J&L's Machine Tool Replacement Information Kit (the low-down on tax depreciation, financing plans and machine tools).

# JONES & LAMSON

JONES & LAMSON MACHINE CO., 520 Clinton St., Dept. 710, Springfield, Vt., U.S.A.

Machine Tool Craftsmen  
Since 1835



MACHINE TOOL DIV.

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# Feeling M-i-g-h-t-y Low?

**IF GRINDING WHEEL PROBLEMS HAVE YOU DOWN IN THE DUMPS, DON'T MONKEY AROUND.** Switch to CINCINNATI (PD) WHEELS. For now CINCINNATI Grinding Wheels offer POSITIVE DUPLICATION—a remarkable achievement in precision manufacturing and quality control that *can save you money . . . and increase your production.*

You'll start every day with a big smile and a spring in your step when CINCINNATI (PD) WHEELS are on the job. For through the CINCINNATI (PD) Manufacturing Process you are assured Positive Duplication of the original wheel *every time* you reorder. "On grade" with a CINCINNATI (PD) WHEEL means all future (PD) WHEELS will act and grind exactly alike.

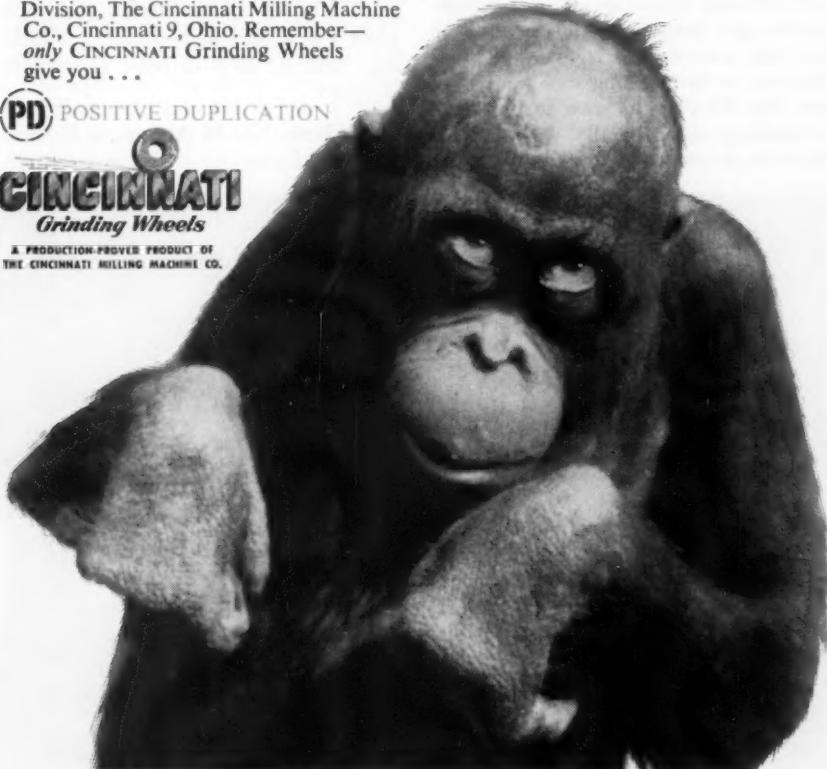
*Yet CINCINNATI (PD) WHEELS are priced no higher than ordinary wheels.*

So, let us help you see the bright side of life once more. Just contact us and we'll send one of our representatives—men who know grinding and grinding machines as well as grinding wheels. Write, wire or telephone Sales Manager, Cincinnati Milling Products Division, The Cincinnati Milling Machine Co., Cincinnati 9, Ohio. Remember—*only CINCINNATI* Grinding Wheels give you . . .

**PD** POSITIVE DUPLICATION

**CINCINNATI**  
*Grinding Wheels*

A PRODUCTION-PROVED PRODUCT OF  
THE CINCINNATI MILLING MACHINE CO.



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used in conjunction with a filtered coolant system.

Details of Norton's very effective Hyprolap demonstration follow:

**Workpiece:** Valve Body for Buick Dynaflow Transmission.  
**Material:** Aluminum

**Operation:** Lap one face for flatness

**Wheel Used:** Norton 37C 280 K9V

**Stock Removal:** .0015" to .002"

**Finish Obtained:** 4 to 5 microinches

**Production Rate:** 519 parts per hour

**Machine:** No. 48F Hyprolap High Production Lapping Machine.

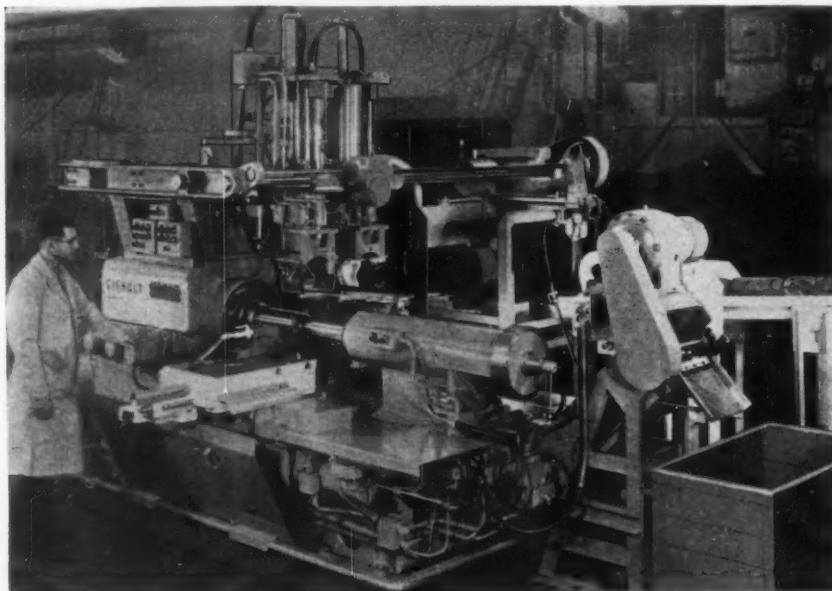
## Lathe Loads and Unloads Automatically

Gisholt Machine Co., Madison, Wis.

Particularly noteworthy in the extensive line of machines demonstrated by Gisholt at the Show, the No. 24 production lathe gave a very convincing performance in handling tough steel oil well tool joint forgings on a high-production basis. Toolled up on both its front and rear carriages for the production of 13-7/8" long tool joint pins, the No. 24 does its own loading and unloading automatically, contributing to its high productivity. Tooling is ad-

justable for various work diameters, and setup is fast because all machine functions may be manually actuated by pushbutton controls. A pair of automatic overhead clamps working together descend to pick up finished parts at the end of the machining cycle and place a new part in position for chucking. Integral chip disposal equipment is fitted.

**Machine:** No. 24 Automatic Production Lathe



## Special Tooling Makes Standard Plain Grinder Fully Automatic

Cincinnati Milling Machine Co.,  
Cincinnati, Ohio

The variety of equipment displayed and demonstrated by the Cincinnati Milling Machine Co. leaves us at a loss to describe all of them in detail. Considered outstanding at the Cincinnati booth, the largest at the Show, was the special tooling shown as an addition to a standard Filmatic 10" x 18" Plain Grinder which makes the machine fully automatic. The grinder so equipped is shown at the extreme left of the view above. A Gap Eliminator on the machine minimizes time required for infeed cycle and thus reduces total time for the entire operation.

Also outstanding in the new Cincinnati line are features of their other machines, such as the small 4" Plain Grinder, which is now equipped with many time saving features not formerly found on machines of its size. An auto-

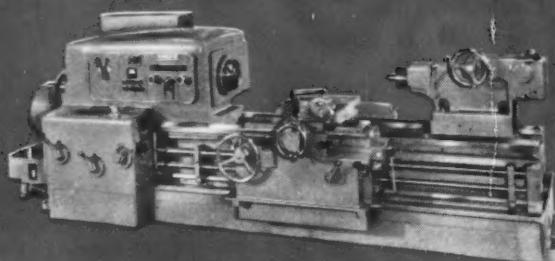
matic infeed attachment and an automatic electric gaging device assure rapid and accurate production of small parts.

The two larger plain grinders are now equipped with Automatic Grinding Wheel Balancing, an exclusive Cincinnati feature that improves the surface finish produced on the work, and eliminates hours of tedious static wheel balancing. Two universal grinders have features of value in toolrooms everywhere. Their Filmatic spindle bearings reduce maintenance expense from this source to zero. They are equally proficient for external or internal grinding, both in one setup, if desired. Controls are arranged for more comfortable operation, and details of accuracy and production are also improved. An Angular Wheelhead Grinder completes the high-precision ring. It is designed to grind both a shoulder and adjacent diameter



# Every Feature Worth a Close, Close Look!

## Series 80 Dyna-Shift



**Models 1690 and 1601**—Clearance diameter 26" and 30". Swing over cross slide 16" and 20". Speed 10-1250 RPM.

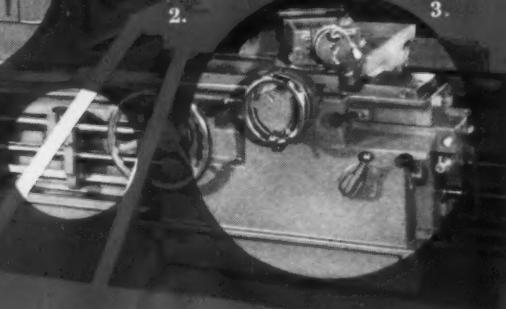
**Models 2009 and 2001**—Clearance diameter 32" and 36". Swing over cross slide 20" and 24". Speed 8-1000 RPM.

**1. Headstock With a Brain!** Dial work diameter setting and surface cutting speed setting. Dyna-Shift headstock *automatically calculates* required spindle speed and shifts to it hydraulically. No mental gymnastics—no compromise speeds!

1.



2.



3.

**2. Support Without a Thought.** On longer bed lathes, the leadscrew, feed and control rods are continually supported by traveling carriers that are automatically picked up and dropped off by apron movement.

**3. Infinitely Variable —Infinitely Effective.** *Variable speed* four-way hydraulic rapid traverse of carriage and cross slide brings tool to work at the rate of travel you choose—does away with final manual positioning.

# The Monarch Series 80 DYNA-SHIFT...

## The New Look in Heavy-Duty Lathes

### Monarch Series 80 Dyna-Shift Lathe.

36 Spindle Speeds. Headstock Ratio—125 to 1.

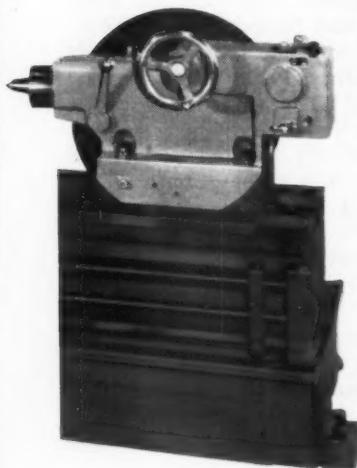
In the Series 80, you get double the usual metal removal rate, or 2 cu. in. per H.P. See too, the new chip-chute bed design for easy chip disposal and the clean, close lathe front with spindle right in your hands.

### Nimble Tailstock.

Two speed range spindle movement — *power positioning* provided by engaging plunger on carriage and using longitudinal power rapid traverse.

Here's the lathe that's the talk of shop and front office alike! The new Monarch Series 80 Dyna-Shift provides a completely new approach to the problem of heavy-duty metal turning—and the results are a rate of metal removal beyond the reach of previous designs; plus added production caused by the many exclusive new built-in conveniences.

A look at just the few features pictured here tells why. Every one adds to the increased productivity and ease of operation of the machine. And there are so many more that we've prepared a complete, illustrated booklet to tell you about them. For full information on the lathe that gives you ultimate proficiency in the use of carbide tooling on work of considerable size—send for our Booklet #1602 . . . . . **The Monarch Machine Tool Company, Sidney, Ohio**



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TURNING MACHINES

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• LONG LIFE

Clip this coupon  
to your letterhead  
for complete  
Dyna-Shift Booklet.

**The Monarch Machine Tool Co.**  
**Sidney, Ohio**

Please send me your illustrated booklet #1602 describing the Series 80 Dyna-Shift Lathe.

NAME \_\_\_\_\_

TITLE \_\_\_\_\_

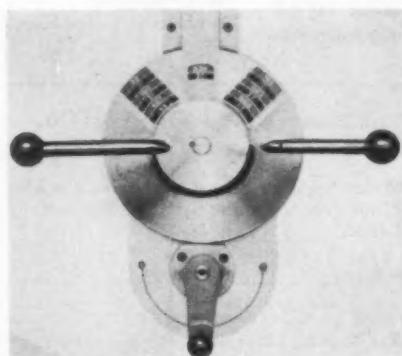
in one operation. Like the plain grinders, it can be equipped with a number of time saving features.

The Centerless Grinders are brand new, and include new features of accurate performance such as anti-friction wheel slide mounting, greater rigidity for grinding with wide wheels (12" face vs 10", for the No. 3 machine), and improved flexibility for changing from one setup to another. Two Micro-Centric Grinders, also in this ring, are first cousins of the Cincinnati Centerless. They greatly improve accuracies obtainable in the anti-friction bearing industry. New features include a new type of work drive which reduces loading time, and a new electrical control cabinet mounted on the machine.

### **Extension Bed Gap Lathe**

**Nebel Machine Tool Corp.,  
Cincinnati, Ohio**

The new Nebel Imperial, seen in action for the first time at the Show, swings 24½" over the ways and 42" through the gap. The direct reading speed selector has 2 levers and color-keyed speed plates to control the entire range of spindle speeds. The Show demonstrator, equipped with a 20 hp



main drive motor, was seen face turning a 24" O.D. ring mounted on the big face plate.

Other data on the Show demonstration follows:

**Part:** 24" O.D. Ring, 16" I.D.

**Material:** 1020 Steel, flame-cut

**Operation:** Facing

**Spindle Speed:** 77 rpm

**Feed:** .022" per rev.

**Stock Removal:** .090" to ½"

**Tool Used:** K-21 Kennametal

**Machine:** Imperial 20"/40" Extension Bed Gap Lathe

### **Screw Machine Feeds Permit Use of Carbide Tools on Many Materials**

**Gear Grinding Machine Co.,  
Detroit, Mich.**

Gear Grinding's new machine represents great advancement in screw machine design and performance in many respects. Its 5 hp motor and advance spindle design permit speeds sufficient to machine all types of materials with carbide tools. Three different spindle speeds can be used during any cycle of work, and all speeds are reversible, eliminating the need for left-hand tools. A three-position crank with the slideable turret unit permits long, medium, and short work to be handled with equal efficiency. Precision work is assured by the Screwmatic's heavy section cross slides and direct cam activation. Tool accessibility is excellent, and the lead cam is fully visible. Chip removal is facilitated by the large, deep chip well.

The Screwmatic 750's Show demonstration job will serve to indicate its capabilities:

**Part:** Nut

**Material:** Brass

**Operation:** Chamfer in and out from



9/16 hex. stock, Tap .475-32 thread holding class 2 fit.

**Gross Production:** 2250 nuts per hour

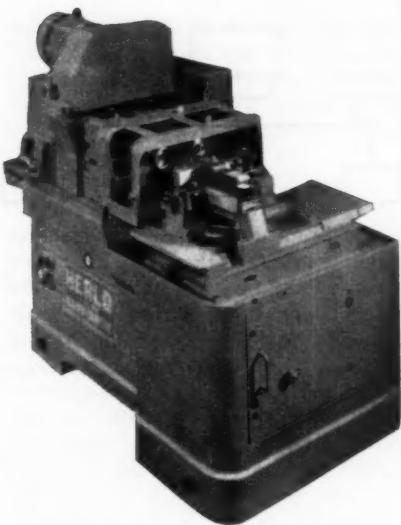
**Machine:** Screwmatic 750 Single Spindle Automatic Screw Machine

### Bore-Matic for Continuous Production of Single Part

The Heald Machine Co., Worcester, Mass.

Completely new in the Heald line-up, the 2215 cam-actuated machines were announced as the Show opened. Identical to the Model 3215, also introduced at the Show, except for size and capacity, this model was designed for small to medium work and especially for continuous high production of a single part. In cycle, the table is advanced to the cam under air pressure; the cam then controls the actual boring cycle. Any combination of straight, taper or contour boring, turning, facing, or grooving operations can be performed.

Here's a summary of the demonstration operation done at the Show:



**Part:** Gear Blank

**Material:** Cast Iron

**Operation:** Front station: bore, face and chamfer; Rear station: turn, face, and chamfer

**Stock Removal:** .010" on faces; .020" on diameters

**Tools Used:** Carbide

**Spindle Speed:** 530 rpm

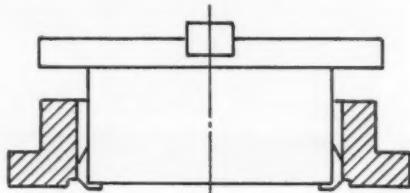
**Cycle Time:** 62 seconds

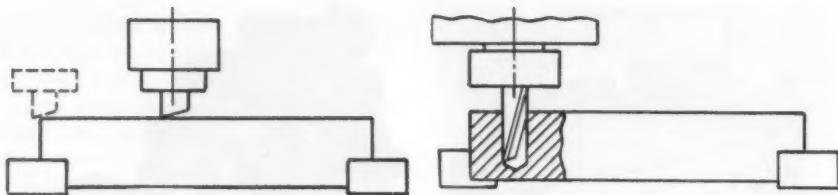
**Machine:** Model 2215 Bore-Matic

### Automated Transfer Equipment

Baker Brothers, Inc., Toledo, Ohio

In a demonstration designed to prove the practicability of automated trans-





fer equipment for the average shop, Baker combined three of their new standard machines with a transfer unit using a simplified fixture as a highlight of their Show presentation. The first unit, a new 50 hp Model 2550, performed a combination bore and counterbore operation on the cast iron demonstration workpiece, cutting a 7.750" dia. bore 3.687" deep, with a feed rate of .049" per revolution. On completion of the boring operation, transfer equipment brought the work

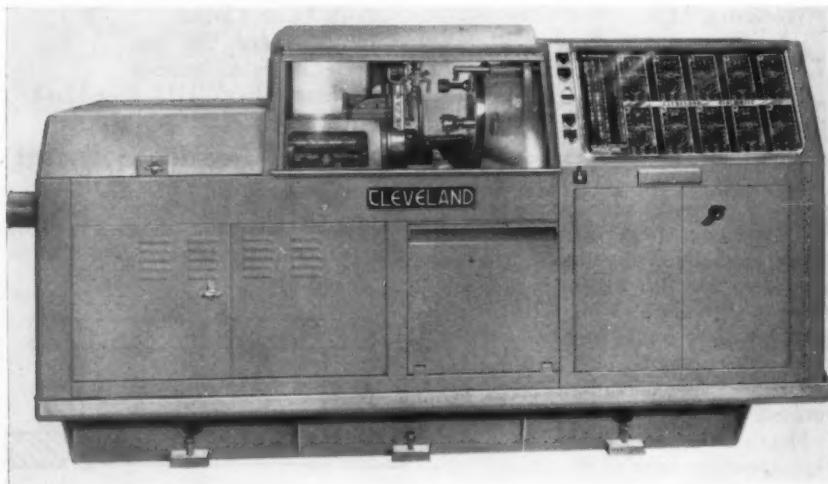
to a second Model 2550 unit for a crossfeed facing operation, with a cut diameter of 15", and a depth of cut of .375"; here the unit automatically decreased spindle rpm as the cut progressed, to maintain a constant surface feed rate. The third unit in the transfer line was a new 20 hp Model 1220 multiple spindle drill, which drilled four holes of .875" diameter at 306 rpm spindle speed.

**Machine:** Model 2550 Boring Mill,  
Model 1220 Multiple Drill

### Single Spindle Automatic Changes Jobs Easily

The Cleveland Automatic Machine Co.,  
Cincinnati, Ohio

To demonstrate the ease with which the entirely new 1 $\frac{3}{8}$ " Model AB can



be changed from one job to another, Cleveland Automatic selected two parts to be run at the Show and included the changeover as part of the demonstration. One part was a plumb bob cap which was machined from free machining brass, and the production was 180 pieces per hour gross. The other

was a plumb bob tip of Type 416 stainless, and production was 109 pieces per hour gross. Changeover time between the two jobs was 17 minutes, which vividly illustrates the flexibility of the new Cleveland.

**Machine:** Model AB Dialmatic, a 1 $\frac{3}{8}$ " Single Spindle Automatic

## Conversion Attachment Makes Standard Lathes Automatic

**The Bullard Co., Bridgeport, Conn.**

Outstanding among new developments at the Bullard booth was the Man-Au-Trol conversion attachment which makes standard Bullard vertical turret lathes completely automatic in operation for high-production work. The 26" machine with the conversion unit displayed at the Show was demonstrating a typical production job, the machining (22 individual operations in all) of an aluminum alloy compressor housing which had presented several difficult tooling problems. Heart of the Man-Au-Trol unit is the function or program control drum, which provides 49 possible changes of pre-selected operations in a machining cycle, controlling table speeds, feeds, head travel (feed or traverse), turret indexing, and engagement of other heads or attachments. The Show demonstration job required the use of the 26" machine's regular 5-position

indexing head plus a 4-position side head.

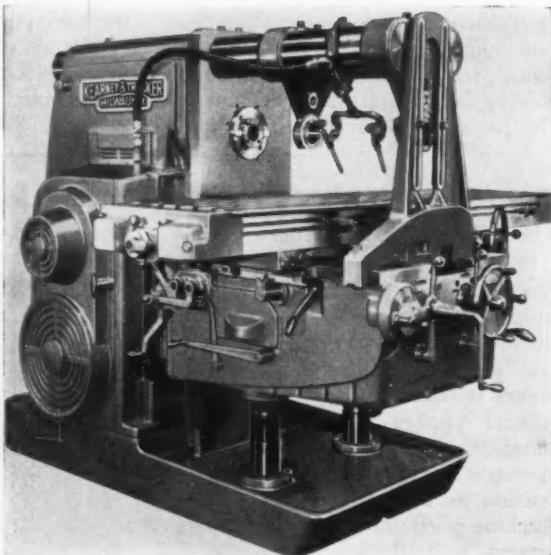
**Machine:** 26" Cutmaster Vertical Turret Lathe with Man-Au-Trol Conversion Unit



## Plain Miller Has 24 Speeds, 32 Feeds

Kearney & Trecker Corp.,  
Milwaukee, Wis.

Featured prominently at the Kearney & Trecker booth was the new line of heavy duty knee-type milling machines, including this model, a 50 hp plain miller. The machine was shown as a vertical model also. Speeds available are 24 changes between 13 and 1300 rpm; 32 feed changes are possible, between  $\frac{1}{8}$  and 90 inches per minute. Design features include a massive new column; a longer, wider, heavier knee; longer, wider saddle, and hardened and ground ways. Controls are well grouped centrally at the front of the machine. Introduced in this model for the first time are twin screws for knee movement and support, precision ground and totally enclosed with-



in telescopic tubes. A new elevating screw lubrication system is employed.

**Machine:** Model 550 Plain Milling Machine

## Face Grinding Machine, B & S

Brown & Sharpe Mfg. Co.,  
Providence, R.I.

Among the very interesting exhibits at the Brown & Sharpe booth, the No. 11 Face Grinding Machine accepts face of work up to 10" in diameter on its workhead, which rotates in a vertical plane. Wheel spindle is of the removable-unit type driven through V-belt by 1½ hp motor, giving speeds of 1910, 2546, and 3640 rpm. Wheel slide is traversed hydraulically or by hand, and work feed is automatic or hand oper-

ated as desired.

Summary of demonstration job at the Show:

**Workpiece:** Pump Gear

**Material:** Machine Steel

**Operation:** Facing one side of gear

**Wheel Grade:** Aluminum oxide, 80 grit, J hardness

**Spindle Speed:** 1910 rpm

**Headstock Speed:** 250 rpm

**Stock Removed:** .008 (rough), .003 (finish)

**Production Rate:** 25 per hour

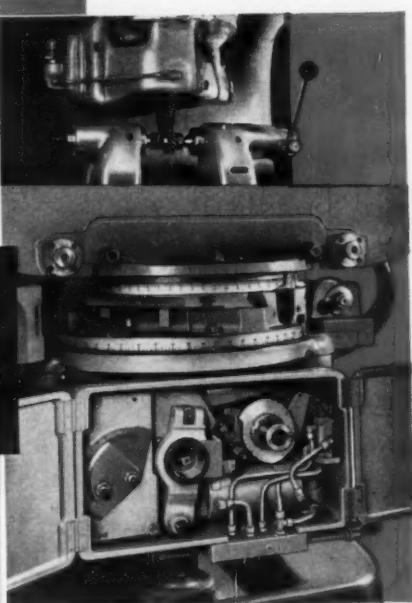
**Machine:** No. 11 Face Grinding Machine

**SPEED Gear  
Shaving and  
Reduce Costs  
with**

## **AUTOMATIC DIFFERENTIAL UP-FEED**

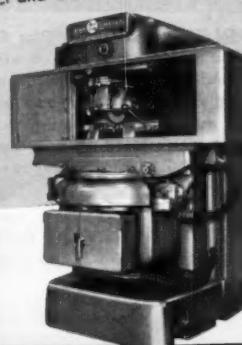
Red Ring Automatic Differential Up-Feed, one of the great developments in the mechanics of gear shaving, offers you such important advantages as:

- Automatic multi-stroke shaving cycle of selected increments of feed and dwell.
- Saves 5 to 10 seconds on each work unit.
- Prolongs cutter life up to 200%.
- Eliminates operator's errors and resultant cutter breakage.
- Minimizes operator fatigue.
- Greatly reduces loading and unloading time.
- Comes from backlash into feed for first cutting stroke about three times faster than that of any other device known.



- Every element of the cycle is positive, precise and fast.

The Automatic Differential Up-Feed is available on Red Ring Shaving Machine Models GCI and GCU.



7273

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GEAR SPECIALISTS  
ORIGINATORS OF ROTARY SHAVING  
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5600 ST. JEAN . . . . . DETROIT 13, MICHIGAN

WORLD'S LARGEST PRODUCER OF GEAR SHAVING EQUIPMENT

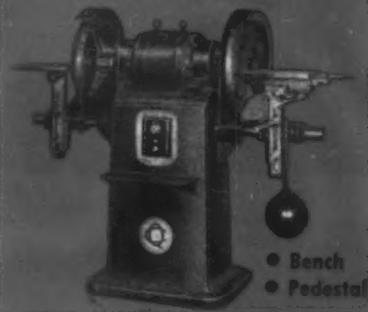
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DISC GRINDERS  
AND BUFFERS



QUEEN CITY Heavy Duty Disc Grinders and Buffers save you money when you buy and during every hour of use. Ruggedly designed, they feature special heavy duty bearings and motors. So good they're offered on a 30-day trial, yet priced 20 to 30% under competing makes.

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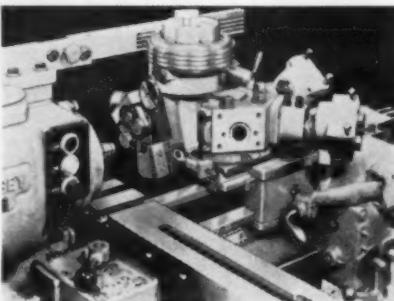
QUEEN CITY  
MACHINE TOOL CO.  
3912 Kellogg Ave., Cincinnati 26, Ohio

"High Quality—Low Cost—For Over 50 Years"

## Shafts Turned to Visitors' Specifications

The Warner & Swasey Co.,  
Cleveland, Ohio

One of the "hottest" items at the Warner & Swasey booth was this new step turning attachment which always drew a big crowd as it was demonstrated. Visitors were given cards on which to write their own diameter specifications for the four steps to be turned, (within a range of  $\frac{3}{8}$ " to  $1\frac{1}{2}$ ") and while they waited, the operator turned



a shaft to their specifications using the step turner mounted on a No. 3 Ram Type turret lathe. Using only one cutter and limited in cutting length only by the ram travel of the lathe used, the step turner has a lot to offer to the shop which turns a wide variety of stepped shafts in small lots and places a premium on fast flexible setup at low cost. Diameters are selected by means of micrometer dials and the need for templates is eliminated. If desired, the step turner can also be utilized as an easily setup single-cutter turner, which when set to trip at the end of the cutting stroke completely eliminates tool withdrawal marks on the workpiece.

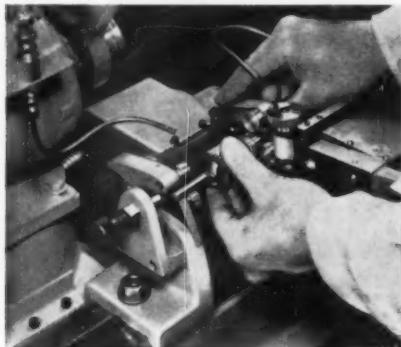
Machine: Progressive Step Turner

Encircle No. 301 on Card, Opposite Page 65

**Lathe Turns Commutator;  
Armature Revolves on Own Axis**  
Rivett Lathe & Grinder, Inc.,  
Boston, Mass.

An entirely new principle of armature turning is employed in a new lathe introduced at the Show by Rivett. Designed solely for armatures of small fractional horsepower motors, Model 1AL turns the commutator while the armature revolves on its own axis, giving extreme accuracy, fine finish, and high production.

The armature mounts on two sup-



ports and is rotated on its own shaft by the friction drive of a revolving belt. By rotating on a parallel axis, the commutator of the armature is turned to true concentricity. The armature revolves under the same conditions as when it is rotating on its own bearings.

The depth and length of cut is performed automatically, with a power driven tool slide, duplicating size on each piece, independent of the operator. Tolerances are held on duplicate work to .0005". Smooth finish is obtained by rotating at speeds up to 7000 rpm, suitable for diamond or carbide-tipped tools. Established production time per piece in turning  $\frac{3}{8}$ " length

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DYE PENETRANT INSPECTION



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Spotcheck - in pressurized spray cans.

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of commutator surface is 11 seconds from tray to tray.

Machine: Model 1AL Armature Turning Lathe

### Oliver Automatic Face Mill Grinder

Oliver Instrument Co., Adrian, Mich.

Oliver introduced the new automatic features of its face mill grinder to vi-

sitors at the Show. The machine automatically indexes and grinds face mill cutters to a form set up by a quickly interchangeable cam. Automatic wheel dressing takes place after each grind, and the machine cycles itself out after a cutter is completed.

In the Show demonstration, this machine was seen grinding a 54-tooth milling cutter, with other details as follows:

CAPEWELL MAKES EVERY TOOTH COUNT

YOU CAN'T BEAT

1881 CAPEWELL

POWER HACK  
SAW BLADES

For heavy feeds and fast speeds, for clean, straight cutting, long blade life, specify Capewell Technite all-hard molybdenum high speed steel blades, Capewell High Speed all-hard Tungsten type 18-4-1 high speed steel blades, or Capewell Safetech, the soft-back safety blade with the hardened high speed steel cutting edge. Ask, too, about Capewell Band Saw Blades, Hand Hack Saw Blades and Microloy Ground Flat Tool Steel. The Capewell Manufacturing Co., 82 Governor St., Hartford 2, Conn.

*Ask your distributor...*

CAPEWELL MAKES EVERY TOOTH COUNT

Encircle No. 303 on Card, Opposite Page 65

MACHINE and TOOL BLUE BOOK

# turn armatures faster, more accurately



with the  
**RIVETT**  
**1AL**  
armature  
turning  
lathe!

**concentricity** Held to  $.0002''$ . Commutator turned while armature revolves on its shaft as in normal use. Depth and length of cut performed automatically.

**finish** Assured by rotating the armature at 7000 r. p. m., and turning with diamond or carbide tool.

**speed** Achieved by simple, quick method of mounting armature between two supports, bringing armature to top speed, and automatically taking cut!

*Get all production facts!*

11 sec. tray to tray operation described  
in bulletin 1AL. Write for copy today!



# RIVETT

**RIVETT LATHE & GRINDER, INC.**  
**Dept. MTR-11, Brighton 35, Boston, Mass.**

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November, 1955

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**Work:** 54-tooth Face Mill  
**Material:** Carbide  
**Operation:** Chamfer & Grind Face of Each Cutting Tip  
**Wheel Used:** Silicon Carbide 80 Grit G hardness

**Grinding Speed:** 6200 surface feet per minute  
**Time Required:** 40 minutes each cutter  
**Machine:** Automatic Face Mill Grinder

## Simple Profile Template is Master for Roughing and Finishing Job

**Seneca Falls Machine Co.,**  
**Seneca Falls, N.Y.**

New in the Seneca Falls Lo-Swing line is this modern, fully automatic high speed tracer lathe which can be adapted to many high production lathe uses, as well as small or medium lots. The model at the Show, with a 40 hp motor, was set up for automatic cycling of roughing and finishing a machine drive shaft, using a simple profile template as a master.

Here's a summary of data on the Show job:

**Work:** Drive Shaft, length 32-7/16", max. dia. 3-1/4", min. dia. 1-1/2"  
**Material:** 4140 Steel  
**Operation:** Cut steps and 2 tapers in shaft, following template  
**Speed:** 350 rpm  
**Feed:** .020" per rev.  
**Tool Used:** Carbide insert  
**Machine:** Model AP Tracer Lathe





## Why everybody is cheering **Cimcool**

There are three good reasons why CIMCOOL® Concentrate, the radically new and different cutting fluid, gets three rousing cheers from plants all across the nation:

- 1 **CIMCOOL LOWERS COSTS** because it's longer lasting in machines. Thus, it reduces downtime and cuts labor costs for cleaning and changing.
- 2 **CIMCOOL DOES A BETTER JOB** because of its chemical lubricity. It permits faster speeds and increases tool life, for it combines friction reduction and cooling capacity in a degree never before attained.
- 3 **CIMCOOL** Concentrate has become, in just a few years, the largest selling chemical cutting fluid in the world.

We know CIMCOOL will score a touchdown with you, and we'll be glad to spell-out the many specific advantages of CIMCOOL Concentrate. We will also provide details on the entire family of CIMCOOL Cutting Fluids. Just contact us and we'll send one of our Cincinnati Milling-trained machinists—without cost or obligation. Wire, write, or telephone Sales Manager, Cincinnati Milling Products Division, The Cincinnati Milling Machine Co., Cincinnati 9, Ohio.

### CIMCOOL CUTTING FLUIDS

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**CIMCOOL Concentrate**—The famous pink fluid which still covers 85% of all metal cutting jobs. Effective, economical and clean.

**CIMCOOL Tapping Compound**—Permits the use of highest tapping speeds and increases tap life amazingly.

**CIMPLUS**—The transparent grinding fluid with exceptional rust control. Also used for machining cast iron and as a water conditioner with CIMCOOL Concentrate.

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**CIMCOOL Machine Cleaner**—The two-phase non-corrosive cleaner that removes grit, dirt, slime and oil.

# CIMCOOL

## Cutting Fluids

for 100% of all metal cutting jobs

PRODUCTION PROVED PRODUCTS OF THE CINCINNATI MILLING MACHINE CO.

## Automatic Boring, Drilling and Tapping on Precision Layouts

Cleereman Machine Tool Co.,  
Green Bay, Wis.

At the Cleereman booth the new jig borer was really stealing the show as it was demonstrated on ultra-precision



layouts. The machine performed boring, drilling, and tapping operations on an almost completely automatic basis not involving any manual handling for operation of the table and saddle slides. Support is given to heavy work



throughout the machine's range, and a new guide design insures precision table and saddle alignment (Cleereman guarantees  $\pm .0001$ " positioning accuracy). To prepare the machine for automatic positioning work for production jobs, special "Dupli-Trol" bars are made using part blueprints, and the bars control automatic movements of the table and slide.

The jig borer was performing several kinds of operations on a Meehanite frame casting as we watched.

**Machine:** Automatic Positioning Jig Borer

## 2-Builder Automated Bearing Line

Bryant Chucking Grinder Co.,  
Springfield, Vt.

One of the most interesting displays that Show visitors saw was the Bryant 2209-Y Internal Grinder teamed up in an automated line with a Landis No. 4 Concentric Grinder and a Bryant Process Controller for turning out New Departure inner bearing races at the Bryant booth. The line as set up eliminated costly work handling and minimized operator attention. The bearing races, previously face ground, are fed

into the Landis machine for grinding on the outer race. They are then automatically checked by a postgage which sends correction signals to the Bryant Process Controller, which makes needed changes in the Landis machine to produce correct part size. Races are then conveyed to the Bryant 2209-Y internal grinder where the bore is ground.

Some of the requirements of the bearings ground at the Machine Tool Show are:

**Hole diameter:** .6693 - .0002

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STANDARD MODELS IN A COMPLETE  
LINE DELIVERED FROM  
DISTRIBUTORS STOCKS!

When you choose IDEAL Live Centers you seldom have to resort to "specials" and the slow delivery and inventory problems they involve. You can handle practically any turning job with a *standard* IDEAL Live Center.

Top performance is also "standard" with IDEAL Live Centers. They have proven heir accuracy and long life in tough service in shops all over the country where they are first choice! When you need a live center, you'll get the one you want, when you want it, easiest, from the complete IDEAL Line, stocked by your IDEAL Distributor.



### UNIVERSAL

Accuracy to plus or minus .0001". Unusually high load capacity up to 5200 lbs. at 50 RPM. Morse tapers 2, 3, 4 and 5.\*



### MULTI-DUTY

Interchangeable male, female and pipe points for centered and uncentered work. Nine sizes: Morse tapers 1 through 5, as well as straight.\* Loads to 1500 lbs. at 100 RPM.



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For close tolerance turning jobs to 22,000 lbs. at 50 RPM. Eccentricity less than .0002". Morse tapers 4, 5, 6 and 7.\*



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For heavy turning work on pipes and other large, hollow cylinders. Sizes range from 3" diam. to 7½" diam. Load capacities up to 22,000 lbs. Morse tapers 3, 4, 5, 6 and 7.\*

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Please send free catalog data on IDEAL Live Centers

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COMPANY.....

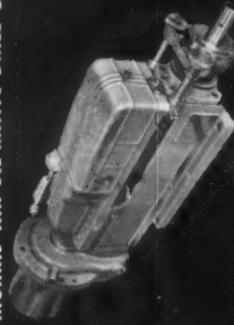
ADDRESS.....

CITY..... ZONE..... STATE.....

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November, 1955

#### MORRIS AIR-OIL-MATIC DRILL UNITS

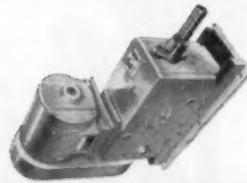


Fast, low-cost production for drilling and allied operations.

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- WIDE RANGE OF SPINDLE SPEEDS
- CONVENIENT CONTROLS
- HYDRAULICALLY CONTROLLED

Available for use on Special Purpose Machines like the MORRIS High Production Machines illustrated.

#### MORRIS CAM-MATIC DRILL UNITS



Newly introduced, MORRIS CAM-MATIC Drill Units provide automatic, electrically controlled, mechanically driven drilling, tapping and allied operations . . . with built-in accuracy, dependability and convenience. Specialty-featured electric clutch provides automatic thrust control and dull or broken drill detection.

#### MORRIS AUTOMATIC BALANCING MACHINES



COMPLETELY AUTOMATIC from load to unload, these machines produce up to 720 perfectly balanced pistons every hour. Units are balanced within one gram plus or minus for extreme accuracy required in finished product.

*Morris*

## MOR-SPEED MACHINE TOOLS

*Designed for Production PLUS Precision*

NEW . . . with proven performance, that's the story of these up-to-the-minute models of MORRIS Machine Tools. For more than 40 years, MORRIS has designed and manufactured high speed, precision equipment. The new models displayed on these two pages are the latest in a series of machine tools that have won the favor of the nation's leading manufacturers.

Your built-in benefit with these new MORRIS Mor-Speed Machine Tools is precise work at high speeds. Make your own comparison of MORRIS features with those of any unit. You'll see why the leaders demand MORRIS!

**MORRIS MOR-SPEED MACHINE TOOLS**  
have been selected by the world's leading manufacturers for low-cost mass production of precision-made parts and assemblies. Complete case history data is available FREE upon request.

Write today for catalogs concerning specific machines. If you prefer, outline your production problem. MORRIS engineers will make recommendations for its best solution.

#### **MORRIS HIGH PRODUCTION MACHINES Special Operations with STANDARD Units**

You can have swift, accurate production on multiple operations like drilling, reaming and tapping with MORRIS Mor-Speed High Production Machines. They provide special operations using standard units, with completely automatic operation. Easy re-align-ment speeds model changeovers.

#### **MORRIS MOR-SPEED RADIAL DRILLS**

**4 Sizes—2 New Units**

#### **Centralized Controls**

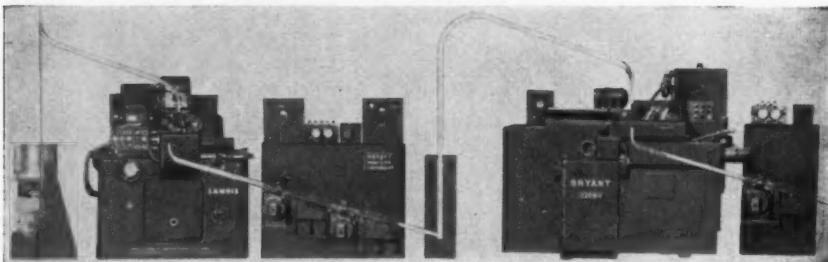
A complete line of heavy and light production radial drills feature centralized controls for ease of operation, fast production. Two new models utilize hydraulic control for push-button operation and pre-selected feeds and speeds...the easiest, fastest operation ever available.

# *Morris*



**THE MORRIS MACHINE TOOL COMPANY**  
**837 HARRIET STREET**  
**CINCINNATI 3, OHIO, U.S.A.**

Encircle No. 307 on Card, Opposite Page 65



Length of hole: .4724

Finish obtained: 10 to 15 microinches

Gross Production: 220 pieces per

hour

Machine: Model 2209-Y Automatic Internal Grinder

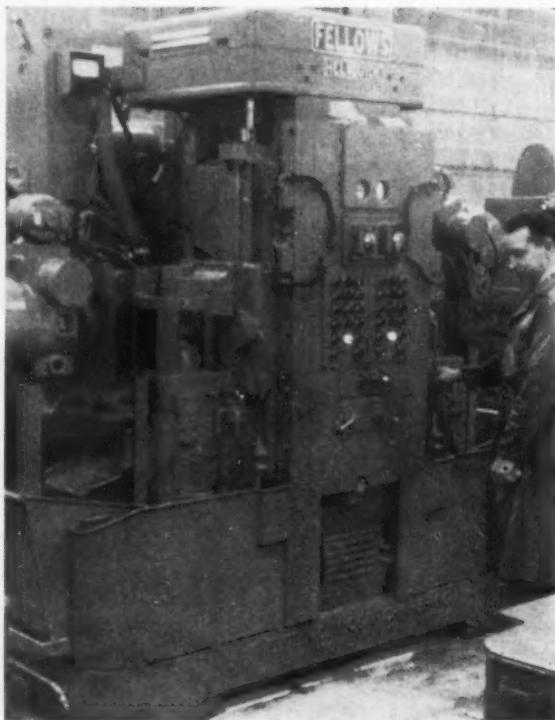
### Different Size Gear Cut on Each Spindle

Fellows Gear Shaper Co.,  
Springfield, Vermont

Down at the Fellows booth they were proudly showing the versatility and high productivity of the new 12GH2 Heli-guide, which has two work spindles independently controlled and which can be operated as separate gear cutting units. Designed for plunge cut and climb hobbing, the cutting action starts at the bottom of the work with the workslide moving down past the hob.

On the machine at the Show Fellows was cutting a different size of gear on each spindle, and each spindle in turn accommodated two gears. Work cycles for the two sizes differed greatly in times required for completion.

Here is a brief sum-





# DESIGN NEWS

News of Design Problems Solved with Flame-Plating

## Flame-Plating proves "Two metals are better than one"

Many times two metals are better than one especially when you can combine the wear-resistance of tungsten carbide with the metallurgical advantages of most any other metal. For example, by Flame-Plating a thin coating of tungsten carbide on aluminum, magnesium, or titanium, you can combine wear-resistance with light weight and moment of low inertia. Undoubtedly, you can think of many other combinations that would help you solve your design problems.

Flame-Plating is LINDE's service, performed in LINDE's plants, for depositing a thin coating of tungsten carbide on metal parts. Finished or semi-finished parts can be Flame-Plated without distortion for the temperature of the part being plated seldom reaches 400 deg. Fahrenheit. The coating may be used in as-coated condition (similar to fine emery paper) or finished to fine tolerances for precision applications.

For the full Flame-Plating story, call your nearest LINDE Office or write for your free copy of the Flame-Plating booklet.

Here are a few highly successful Flame-Plating applications. Perhaps Flame-Plating can help you solve design problems on similar parts.



Aluminum Forging



Shaft Seal



Gripping Dog



Plug Gage



design with  
Flame-Plating  
in mind

**LINDE AIR PRODUCTS COMPANY**  
A DIVISION OF UNION CARBIDE AND CARBON CORPORATION

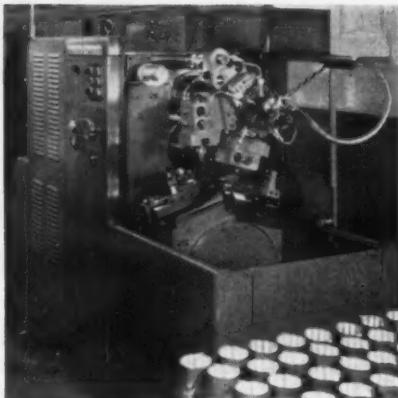
30 East 42nd Street, New York 17, N. Y. Offices in Other Principal Cities

In Canada: LINDE AIR PRODUCTS COMPANY  
Division of Union Carbide Canada Limited, Toronto

"Linde" is a trade-mark and "FLP" is a service mark of UCC

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November, 1955



mary of the Heliguide demonstration job:

**Workpieces:** (1) 6.6 pitch spur gear  
(2) 810 pitch 31° helical gear

**Material:** (1) 8620 steel  
(2) 4026 steel

**Operation:** Hob required teeth in both gear sizes, two gears per spindle

**Cutting Speed:** 300 sfm

**Feeds:** (1) .100" per revolution of work  
(2) .125" per revolution of work

**Cycle Times:** (1) 5 minutes 28 secs.  
(2 pieces)  
(2) 1 minute 6 secs. (2 pieces)

**Machine:** 12GH2 Heliguide Hobbing Machine

## Fifteen Operations in Two Minutes

The Warner & Swasey Co.,  
Cleveland, Ohio

Operating at the Show under practical shop conditions this Warner & Swasey demonstration of the No. 1 AC was moved from a customer's shop, tooling, castings and all, to illustrate the ability of the machine and relatively simple tooling to do an accurate high production job. The part, a hoist body

machined from a permanent mold magnesium casting, was checked for accuracy on a Probomat in the Warner & Swasey Research exhibit nearby. Engineered for fast and easy automatic selection of 6 spindle speeds from a 12-speed, 57 rpm to 1498 rpm range, the No. 1 AC uses a 10 hp main drive motor driving through a hydraulic clutch headstock. Any 3 feeds from an 18 feed range may be selected.

Other data on this demonstration:

**Part:** Hoist Body

**Material:** Magnesium Casting

**Operations:** Rough & Finish Boring,  
Chamfering, and Facing

**Surface Speeds:** 550 to 1500 sfm

**Cycle Time:** 2 minutes per piece (15 operations)

**Machine:** Model 1 AC Single Spindle Chucking Automatic

## Complex Part Completed with Standard Tools

The Warner & Swasey Co.,  
Cleveland, Ohio

In this production demonstration at the Warner & Swasey booth, emphasis was placed on the machine's ability to complete a complex part using standard

tools and a standard machine quickly set up for small lot production. The part produced in the demonstration was a cast iron body 8" in diameter by 5" long. During the machining cycle the spindle speed was changed automatically 7 times and the feeds 8 times, in addition to the use of automatic reverse feed for a tapping operation. Any 6 spindle speeds from a 12-speed range and any 6 different feeds from a 36 feed range may be selected for completely automatic operation of the Model 2 AC. Such functions as stroke length, rapid traverse, dwell, and late cross slide operation also are controlled

automatically by means of electrical limit switches operated by trip dogs and switch operating screws.

Here are more details of the Show demonstration:

**Part: Body**

**Material: Cast Iron**

**Operations: Rough & Finish Turning, Rough & Finish Facing, Chamfering, Tapping**

**Cycle Time: 5.3 minutes per piece (16 operations)**

**Surface Speeds: 195 to 500 sfm**

**Machine: 2 AC Single Spindle Chucking Automatic**

## Threads Rolled After Center is Drilled Out

Landis Machine Co., Waynesboro, Pa.

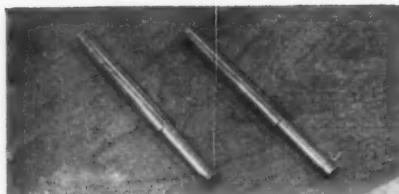
One of the truly major advances in the field of thread generation, the new Landis Lanhyrol machine, as it demonstrated the chipless cold-forming process, attracted widespread attention and comment at the Show. The Lanhyrol will produce threads from 3/16" to 3" in diameter. It features a two-roll design with the workpiece being supported between the rolls by a workholding fixture. Threads are produced by any of four different rolling methods, depending upon workpiece design, material hardness, and thread specifications.

The remarkable thing about the particular demonstration at the Show was the fact that threads were rolled on the



thin-walled end of a workpiece whose center had been drilled out.

You may be interested in other in-



formation on the Show job being run:

**Workpiece:** Shaft 4.22 inches long  
**Material:** 1030 Steel - 20 to 28 Rockwell C

**Operation:** Roll thread 5/16" - 24NF, .236" long on shaft end

**Tolerances:** Class 4

**Production:** 18 per minute

**Machine:** Lanhyrol Thread Rolling Machine

## Six-Spindle Automatic Chuckers Feature Large Capacity, High Output

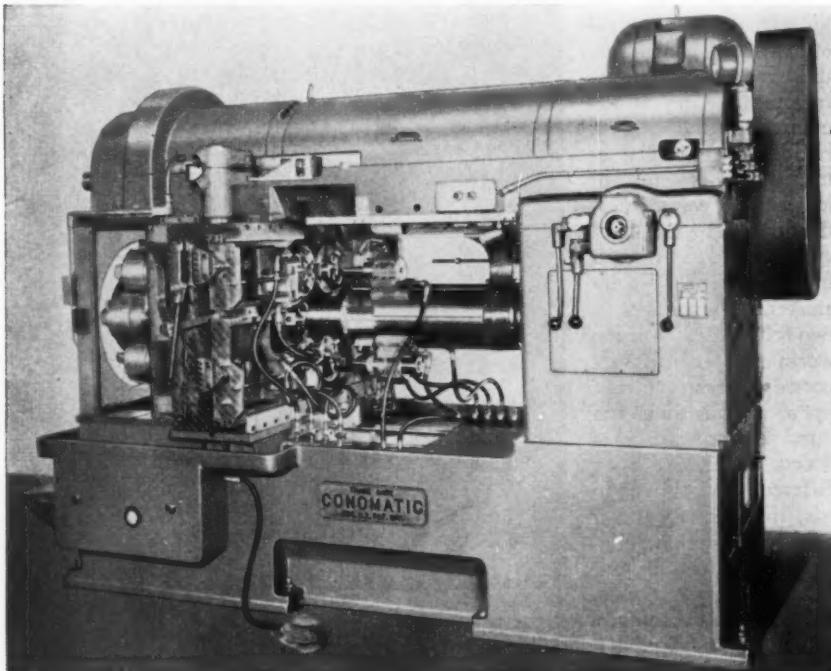
Cone Automatic Machine Co. Inc.,

Windsor, Vermont

The new 6-spindle automatic chuckers were highlights of the Cone booth at the Show and attracted much attention with their large capacity and

high output. The 9-3/4" machine featured air-operated chucks, and workpieces for demonstration work were chosen to show to advantage the capabilities of the machine.

**Machine:** 9-3/4" Six Spindle Chucking Automatic

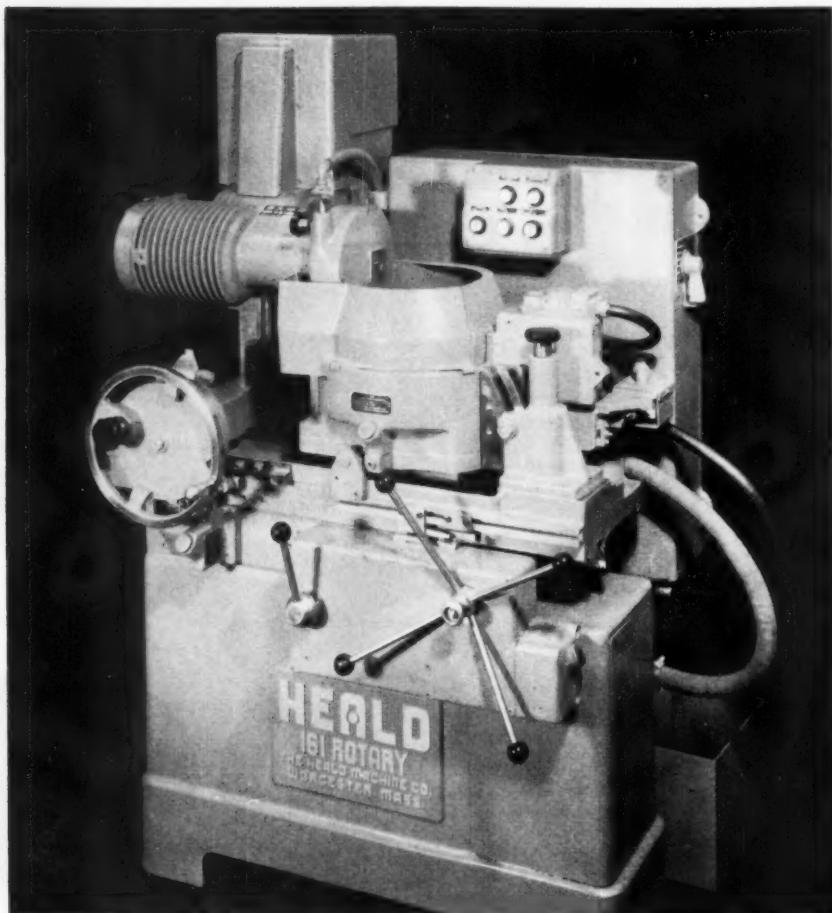


## Rotary Surface Grinder Capable of 6-10 Micro

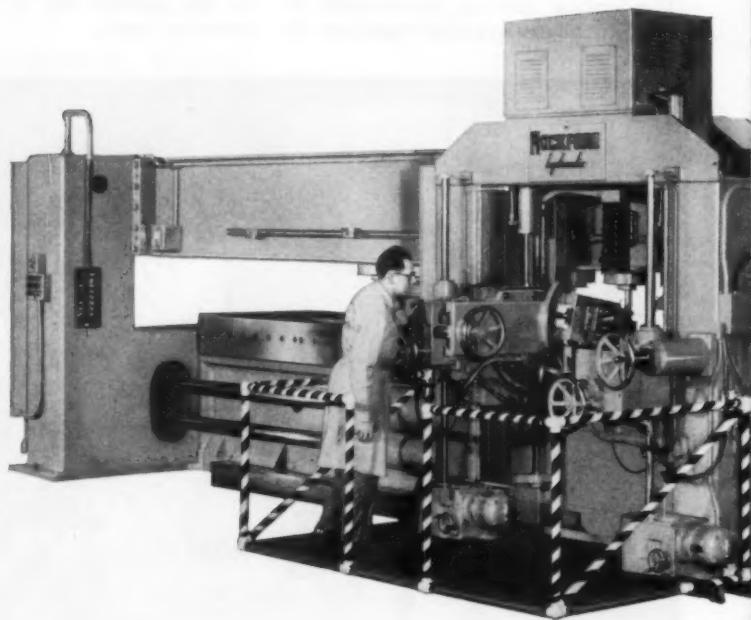
**Heald Machine Co., Worcester, Mass.**

Shown for the first time at the 1955 Machine Tool Show, Heald's completely new vertical column Model 161 reveals many advances in the design of rotary surface grinding machines. The vertical column construction effectively places grinding pressure di-

rectly over the ways, contributing to accuracy. A 6 to 10 microinch finish is said to be common on suitable materials. The Model 161 is furnished with manual or mechanical type power table reciprocation and is ideally suited to the general run of small surface grinding work.



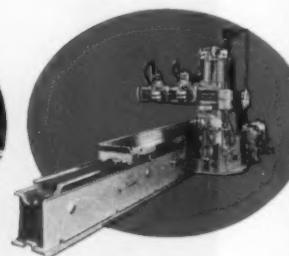
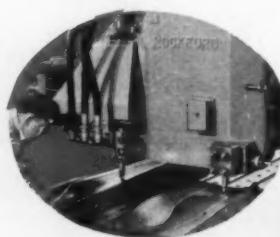
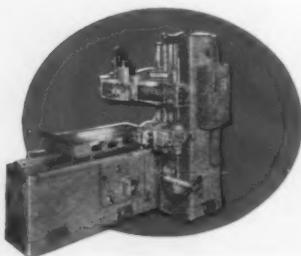
**another new hydraulic design...**



Hydraulic Openside Shaper

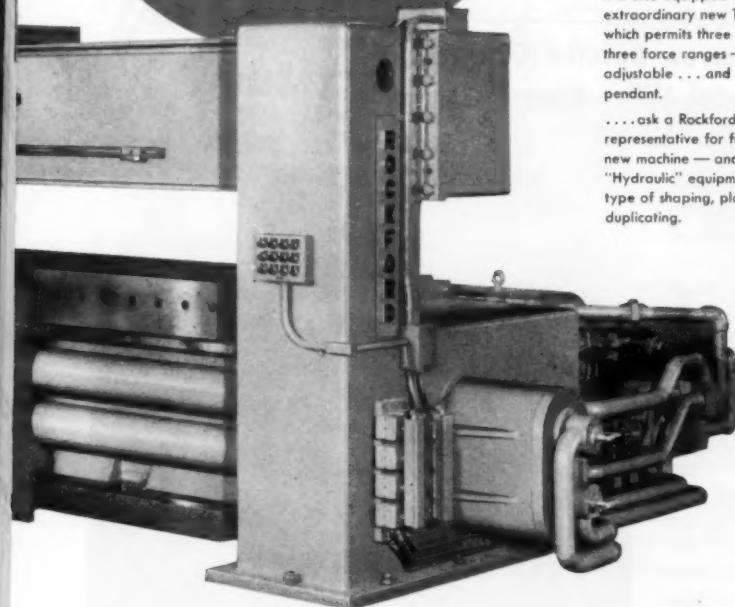
Hydraulic Kopy-Kat Duplicator

Hydraulic Shaper-Planer



# plate edge **PLANER**

with triple circuit!



...the new Plate Edge Planer is one of the latest developments of the Rockford Machine Tool Co.

...it represents the first basic improvement in this type of machine in the past half century.

...the Hydraulic Plate Edge Planer has a working capacity up to 30" wide x 7 inches thick and its saddle reciprocates from 10 to 200 feet per minute. It is also equipped with the company's extraordinary new Triple Circuit ... which permits three speed ranges and three force ranges — all infinitely adjustable ... and controlled from the pendant.

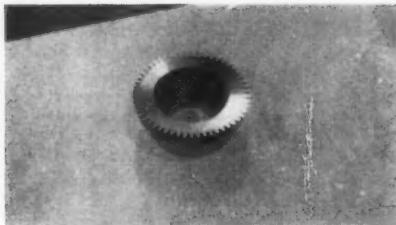
...ask a Rockford Machine Tool Co. representative for further details on this new machine — and how modern "Hydraulic" equipment cuts costs on every type of shaping, planing, slotting and duplicating.

**ROCKFORD MACHINE TOOL CO.**  
2500 KISHWAUKEE STREET • ROCKFORD, ILLINOIS



November, 1955

Encircle No. 309 on Card, Opposite Page 65



Heald did an outstanding job of describing the demonstration operations being done at their booth, with a well-

illustrated sign at each machine. The Model 161 was seen grinding the concave face of a Fellows gear cutter. Other details are as follows:

**Part:** Gear Cutter

**Material:** High Speed Steel

**Wheel Used:** Norton 37C320J8E

Crystolon

**Finished Obtained:** 2 to 4 micro-inches

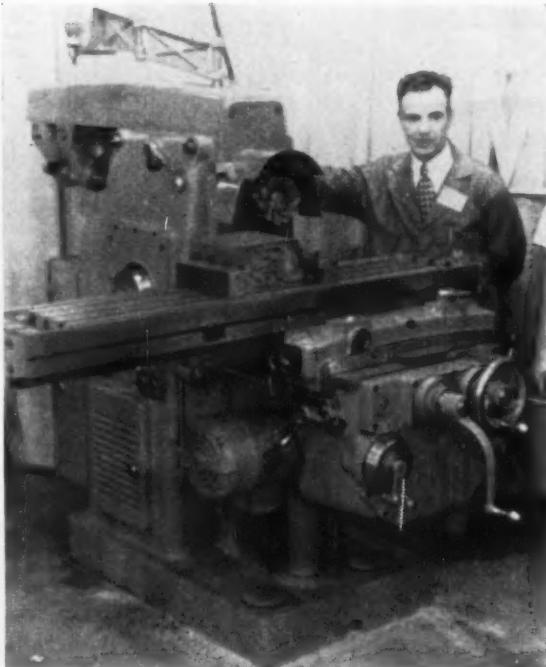
**Machine:** Model 161 Rotary Surface Grinding Machine.

## Wide Knee, Narrow Dovetail Guide Makes Horizontal Miller More Rigid

**Kempsmith Machine Co.,**  
Milwaukee, Wis.

The first of a new line of knee-type milling machines to be produced by Kempsmith, this model has many noteworthy features. In the interest of greater rigidity, the new machine has a wide knee and a narrow dovetail guide. All clutches have been eliminated from the main drive, and standard electrical components are used throughout. Receiving favorable comment from show visitors was the 500 lb. capacity handy lift mounted on top of the machine. Among the many attachments available for the No. 2 are a universal milling attachment, a vertical milling attachment, and a slotting attachment.

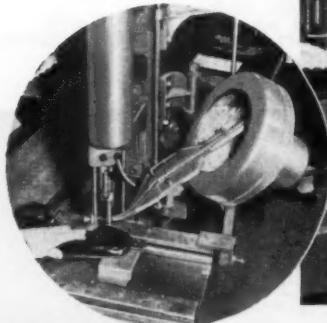
At the show, the No. 2 was doing a demonstration face milling operation



PRODUCTION  
COST

Cut 2/3

You Can Make a Similar Saving  
in Your Assembly Department!



**DPS POWER  
SCREWDRIVERS**

assembling  
automobile  
arm rests

● These two machines maintain a production rate in excess of that previously attained by six hand operations, effecting an immediate saving of 66 2/3%. This versatile equipment, used in prominent plants everywhere, can be adapted to your individual needs—So, get more action in your Assembly Department now—more speed—more profit. Write us, give details and our trained engineers will work out the proper solution of your problem.

**DETROIT POWER SCREWDRIVER CO.**

2809 W. FORT ST.

DETROIT 16, MICH.

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159

on cast iron, using a carbide cutter driven at 292 rpm and a feed of 20- $\frac{1}{8}$ " per minute.

**Machine:** No. 2 Master-Mill Plain Knee-type Horizontal Milling Machine

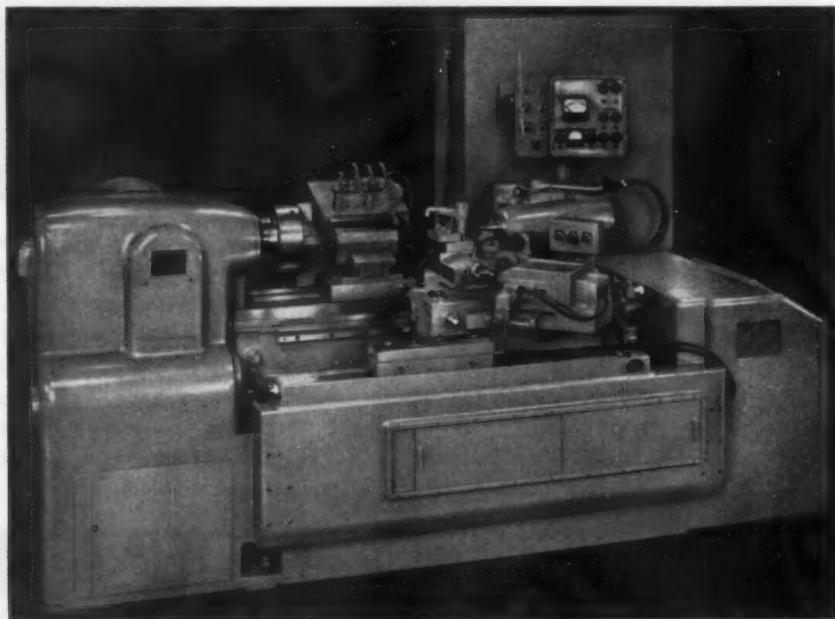
## Lathe Has Four-Cut Automatic Work Cycle

**The Monarch Machine Tool Co.,  
Sidney, Ohio**

The Model 21 Mona-Matic lathe was an important exhibit in Monarch's booth, which displayed a real variety of new equipment. The machine features a four cut fully automatic work cycle, high turning speeds, and greater cutting capacity than former models. Developed for quantity manufacture of a given workpiece, it has an electric multicycle programming control which permits completion of cuts automatically after a "push-button" start by the

operator. The heart of the programming control is a special cam stack which dictates the operating sequence desired, automatically regulating the cutting tools, carriage feed and traverse, the rear slide, and the air gage tracer. Up to six different speeds, three rough cuts and one finish cut are available. Main drive motor is 20 hp, giving high cutting capacity. The Mona-Matic was seen performing typical production work at the Show.

**Machine:** Model 21 Manufacturing Lathe



*Now Ready —*



CATALOG  
AND  
HANDBOOK

*No. 36*

**New and Revised Edition**  
containing valuable, practical and  
exclusive Engineering and  
Production Data on Precision  
Measurements

This universally known and respected technical handbook contains 258 pages of practical information in ready reference form on precision measurements. We believe it to be the most complete text and tables on wire measurement of screw threads and gears in existence. In addition to the formulas, revised tables, technical material, products and procedures previously included, the new handbook features the following:

**New Engineering Data:**

1. Vogel Exact Equations for the wire measurement of screw threads, including those of unknown profile.
2. Vogel Master Approximate Formula for screw thread measurement and numerical examples.
3. Consolidated Gear Tables . . . K and M values for two or more wire diameters.
4. Circular Pitch wire sizes.
5. Information on the wire measurement of enlarged pinions, reduced gears and helical gears.
6. Change (K) Factors for helical gears.
7. Tables for pin measurement of sprocket teeth.
8. Pin measurement of face gears.
9. Unified Thread form and series.



10. Tables on measurement of Buttress threads.
11. Gear and Thread measuring bibliography.
12. Optical Flats specifications.
13. Seal Ring Measurements.
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**New Products:**

Light Wave Equipment for the shop.  
Quartz Optical Flats to 16" diameter.  
Micropages in .000008" accuracy; 81-block sets.  
Class XXX (.000010" tolerance) Plug Gages.  
Chrome Carbide Plug Gages.  
Standard Nominal Diameter Sets of Plug Gages.  
Trileck Plug Gages.  
Master Setting Disks.  
Multipurpose Gear Wire Sets.

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Kindly make your request for the NEW, REVISED Van Keuren Catalog and Handbook No. 36 on your own or your company's letterhead. Your request incurs no obligation.

THE *Van Keuren* CO..

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Disks . . . Thread Measuring Wires . . . Gear Measuring Wires . . . Carbide Plug Gages . . . Laps and Surface Plates . . . Precision Lapping Service.

Encircle No. 311 on Card, Opposite Page 65

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## Grinding Gear Blanks at 885 Per Hour

Gardner Machine Co., Beloit, Wis.

This new machine attracted a good share of attention at the busy Gardner booth as it turned out gear blanks at a fast clip. A completely new designed horizontal double spindle machine, it is capable of high production and precision grinding. Workpieces are loaded by an elevator feeder with roll-chute delivery. Parts are pneumatically transferred from the roll chute to an 18" rotary carrier whose drive permits production of 594, 780, or 885 ground parts per hour. A Sheffield automatic size control unit is fitted. New design features include a new spindle designed for increased rigidity at the rim of the 30" disc, new ways designed for increased stability, and front and rear hand wheels for convenience of size setting and disc dressing.

**Work:** Rear pump drive gear blank

**Operation:** Grind faces for flatness and parallelism

**Wheel Used:** Gardner yellow-rim resinoid disc

**Stock Removal:** .010" to .018"

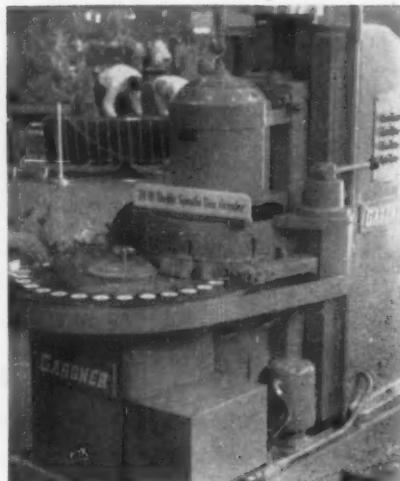
**Tolerances Required:** .0003"- .0005" flatness, .0003"- .0005" parallelism, .001" uniformity

**Machine:** 2H30-30" Precision Double Disc Grinder

## Grinding Ceramic Switch Stators

Gardner Machine Co., Beloit, Wis.

Many Show visitors, unaware of the role of grinding machines in the finishing of ceramic products, were interested by this machine, which was demonstrating surface grinding of small ceramic switch stators at the Gardner booth.



**Work:** Ceramic switch stators

**Stock Removal:** .010" to .016"

**Tolerances Required:** .002" flatness, .002" parallelism, .004" uniformity

**Production:** 1200 per hour

**Machine:** Model 2V-18 Double Spindle Disc Grinder



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THE DRILL SERGEANT



"These drills  
really get the  
chips lead out!"

and . . . Advanced manufacturing methods  
in NEW YORK TWIST DRILL's modern plant  
guarantee you savings of at least 20%

SMOOTHER HOLES . . . It's the *chips* that score up the hole surface. You need polished flute drills to get those chips out.

NEW YORK drills are ground from the solid to a 15 to 20 micro-inch finish and accurately pointed on machines of our own design. These ultra-smooth flutes improve drilling of heat-hardened aluminum, titanium, magnesium and other non-ferrous metals.

NEW YORK drills are made to last longer, give you greater production. You get more holes, all perfectly round, exactly on size, without burrs. *That's* why so many of industry's largest and most discriminating users specify NEW YORK!

*Write now for catalog, technical manual and net prices.*

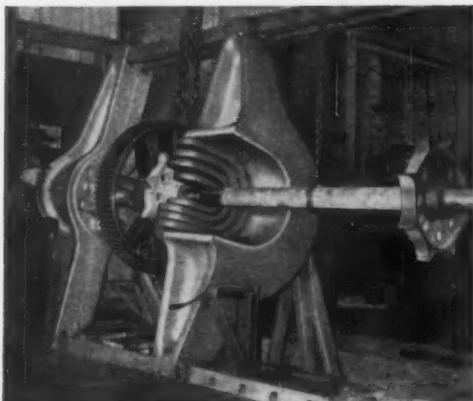
**NEW YORK TWIST DRILL COMPANY, INC.**

MAIN PLANT IN WESTBURY, L. I., NEW YORK

EASTERN HEADQUARTERS: 278 LAFAYETTE STREET, NEW YORK 12, N. Y.

MIDWESTERN HEADQUARTERS: 30-A NORTH CLINTON STREET, CHICAGO 6, ILL.

# A MOUNTAIN of POWER



**POWER FOR BIG JOBS**—Here a Rodgers 600-Ton Inclined Forcing Press is forcing a large gear and sprocket from a mine machine shaft.

## —or a touch of pressure

The heavy machines and equipment used in the great iron mining industry present a variety of problems when repair or maintenance is necessary. For this work the accurately controlled action of Rodgers Hydraulic Forcing Presses is a real time and work saver.

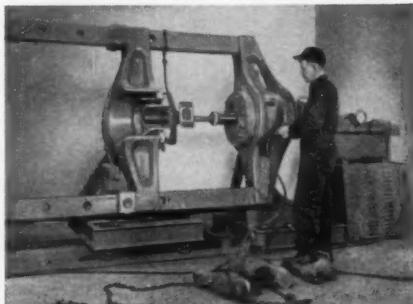
A Rodgers Forcing Press puts a mountain of power at your fingertips to force wheels, sprockets or gears from their shafts and for straightening, assembling, swaging or upsetting jobs. Operators also use the versatility, speed, power and positive control of a Rodgers Forcing Press to efficiently perform small pressing and forcing jobs with just a touch of pressure—tasks once done only on vertical shop presses!

## *you get both with RODGERS FORCING PRESSES*

Rodgers vertical, horizontal and inclined forcing presses offer capacities from 100 to 600 tons . . . up to 9 feet between tension bars . . . up to 16 feet between ram and abutment . . . single or double acting cylinders with 13 or 26-inch ram travel (72-inch travel available) . . . electrically powered hydraulic pumps with selective, positive pressure adjustment and remote control . . . removable press cylinders that can be used in special jacking or pulling jobs . . . and many more features that assure you of dependable, long life operation—all fully described in Rodgers Catalog Number 315A.

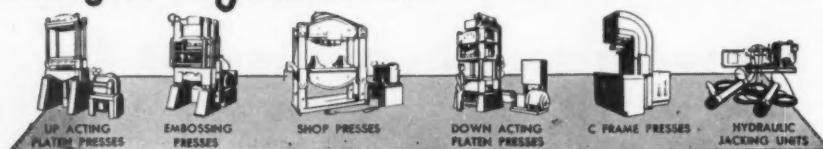
**Write for it today!**

## Rodgers Hydraulic Inc.



**LIGHT TOUCH FOR SMALL JOBS**—This Rodgers 300-Ton Inclined Forcing Press is used on small as well as large equipment repairs. Here, a pin is being pressed out of a tractor idler support bracket.

7453 Walker St., Minneapolis 16, Minn.



Encircle No. 313 on Card, Opposite Page 65

# Shop HINTS



## Split Bushing Cost Reduction

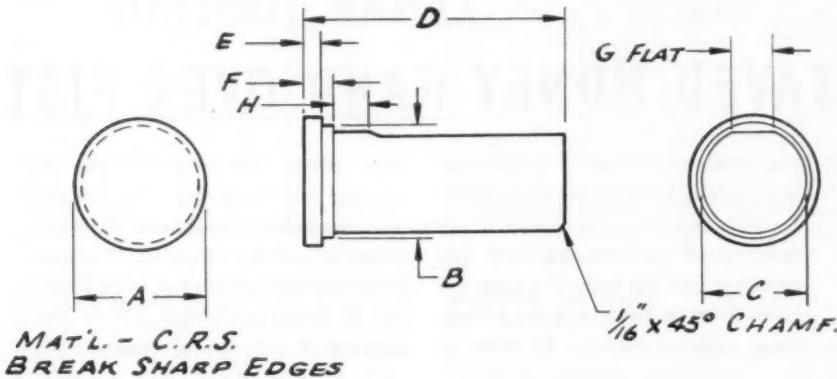
by Edward McIntyre

Selecting a size range of reamer bushings to cover potential requirements in a shop is a speculative undertaking.

Different methods are used. A large manufacturing plant with an unlimited tooling budget might well stock split bushings for all types of tool holders with bore diameters in increments of  $1/64$ . Certainly this would be an ideal approach, but it would not be the answer because no one can possibly anticipate on-the-spot requirements for

special sizes, nor what reamers would be available for alteration.

For smaller shops the problem of bushings is almost constant; in many cases it is critical. Jobs are held up while bushings are hurriedly improvised. The cost of improvised bushings is prohibitive. The job is usually performed in a haphazard manner without regard for concentricity. It is made from any type of material that is handy. It requires setup time and operating time.



BLANKS BUSHING - GLENCO - FLOATING HOLDER

TOOL NO.	A	B	C	D	E	F	G	H
WS-5085	$5/8$ "	$19/32$ "	$5.620$	$1\frac{1}{8}$ "	$1/8$ "	$5/32$ "	$1/4$ "	$5/32$ "
WS-5086	$7/8$ "	$13/16$ "	$7.495$	$1\frac{5}{8}$ "	$1/8$ "	$5/32$ "	$3/8$ "	$1/4$ "

FIG. 1



51 holes in cover and valve body vary in diameter from  $1/16"$  to  $13/16"$ .

## HERE'S HOW ZAGAR TOOLING SAVED MONEY HAND OVER FIST

This aluminum die casting is processed in its entirety by Zagar planning, except for milling two faces. Two lines of Zagar standardized self-clamping drill jigs ream, tap and drill both valve body and cover. With 24 heads and 24 fixtures, Zagar performs work on 51 holes on

close centers. Step tools take care of reaming and burnishing. The fixtures were designed to compensate for slight inaccuracies in the die casting. Thus has Zagar engineering solved an acute problem of limited production without the purchase of costly special machines.

Write for Bulletin "B-11."

**ZAGAR TOOL, INC.**

24000 Lakeland Blvd., Cleveland 23, Ohio

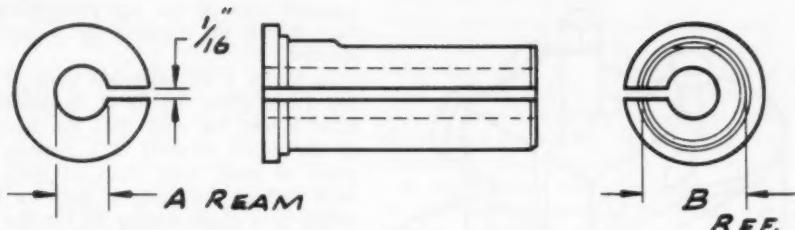


TOOLS FOR INDUSTRY  
and SPECIAL MACHINERY

Encircle No. 314 on Card, Opposite Page 65

MACHINE and TOOL BLUE BOOK

## Shop Hints



**NOTE: DIA'S. A & B MUST BE CONCENTRIC WITHIN .0015 F.I.R.**

### **BUSHINGS - GLENCO - FLOATING HOLDER**

TOOL NO.	A	B	BLANK NO.
WS-5085-01			WS-5085

**FIG. 2**

After it is completed it usually goes onto the job unidentified and therefore is lost to future application, or is sorted out at some later date from a box of similarly made bushings at great loss of time.

It is not a major problem to stop this waste and still have the correct bushings at minimum cost with a very limited lead factor.

First, appoint one man to be responsible for all bushings so that interchangeability can be coordinated within your own shop. Design tabulated prints for blank bushings only (see figure 1). Now you are set to mass-produce or purchase the blanks in quantities commensurate with sound business practice and at a greatly reduced cost.

The basic dimensions of these bushings do not change. Only the bore diameter changes. See figure 2.

Figure 2 is a tabulated print of Figure 1 developed. The available blank can usually be drilled and reamed upon the machine in which it is to be used. This machining plus milling the slot and de-

burring is but a few minutes' operation.

As has been observed, these charts indicate "Glenco" floating holder bushings, but these same bushings will find immediate application as collet bushings in hand screw machines, and as turret bushings in certain hand screw machines. Other applications for these bushings will multiply as your charted bushing inventory develops. With a little careful thought a few basic bushing designs can be made to cover a vast bushing requirement.

#### **Magnetic tap guide**

by **Tom Brown**

Apart from proprietary makes of tools which incorporate permanent magnets in their construction, there are available stock permanent magnets which tool designers may build into their own schemes.

One useful form of permanent magnet is termed a "pot magnet." This comprises a mild steel cylindrical housing which is machinable on its exterior. The magnet is in the form of a cylin-

## Shop Hints

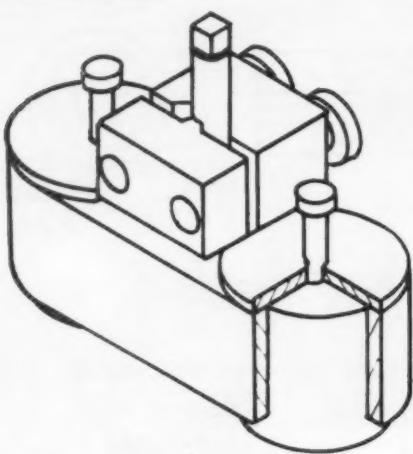


Figure 1

drical cord and is united solidly to the exterior mild steel pot by an insulating ring of aluminum. One application of the pot magnet to a useful design of shop tool is to incorporate them into the construction of a tap guide.

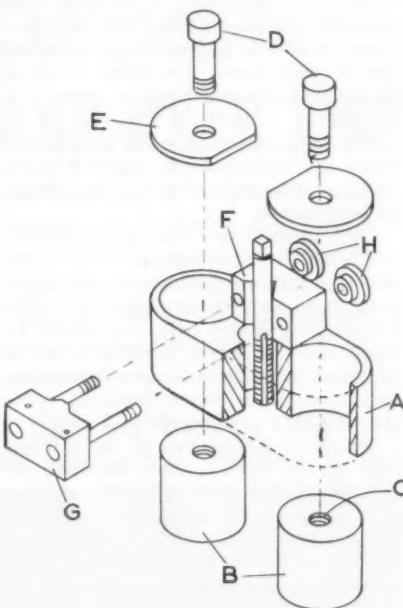
The tap guide is used by tool makers and fitters to locate the tap axis vertically over the drilled hole which is to be threaded. The tap axis is maintained at a right angle to the work surface during the cutting of the first few threads, after which, the rest of the taps and those which follow will all travel along the initial true start.

An advantage of using the magnetic tap guide lies in the way in which the magnets will adhere strongly to any non-ferrous metal surface. Furthermore, the surface need not necessarily be perfectly horizontal. The work surface may be tilted at any angle and can even be positioned overhead. This is a great advantage for fitters and erectors of large machines who have to use hand taps on various parts of a big structure.

In figure 1 the tap guide is shown in place on a piece of work, with the squared end of the tap protruding so that it can be engaged by a suitable wrench.

In figure 2 an exploded view of the tap guide gives details of its construction. It can be seen that the body **A** of the guide consists of a rectangular piece of steel with rounded ends. At each end of the body is bored a hole which is a close sliding fit for the pot magnet **B** fitting therein. The exterior surfaces of the magnets are machined and in the example shown they clean up to 1" dia. and are 1" long. The magnets used have a threaded hole **C** in their upper faces and this is utilized to take the headed screw **D** on which fits loosely a washer **E**. The screw and washer are to prevent the magnets from falling out of the body, although they

Figure 2



## Shop Hints

allow them to slide in the holes.

On top of the body and integral with it is a V-block **F** in which can fit the plain portion of the tap shank. Below the V-block, the body is bored out to clear the largest size of tap used in the guide. The tap shank is pushed snugly into the V-block by the clamp block **G** which is fitted with a pair of locating pins for engagement with a corresponding pair of holes bored horizontally through the V-block. The ends of the locating pins are threaded for engagement with the two thumb-nuts **H** which enable clamping pressure to be exerted on the tap shank. By using a V-block and a clamp block, the tap guide will accommodate any standard shank used on taps ranging from  $\frac{1}{8}$ " to  $\frac{1}{2}$ " thread diameter, without the need for guide bushings.

In use, the tap shank is engaged with the V-block and sufficient clamping pressure is applied to it by means of the thumb nuts to allow the shank to rotate in the V without shake. The tap shank is pushed downward in the V-block so that its leading end protrudes below the bottom surface of the body. The magnets are pulled upward in the body by means of the screws in their upper ends.

It is now possible to insert the tapered end of the tap into the drilled hole in the work. If the magnets are now allowed to drop into contact with the work surface, they will cling thereto. If the tap has been inserted into the hole out of square with the work surface, the magnets will tend to pull it and the body into an upright position.

Tapping can commence when the body has been pushed downward on the magnets so that it is in the condition illustrated in figure 1, where the bottom face of the body is practically in contact with the work surface. The tap can be threaded into the work until the wrench makes contact with the

top of the V-block, after which the guide can be removed.

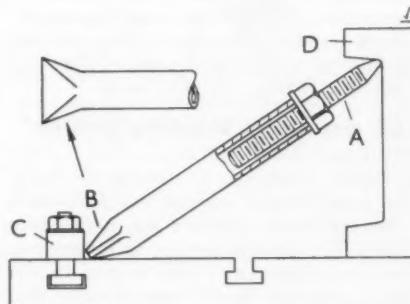
On a tap having a thread longer than the height of the body, tapping will commence with the body clear of the work surface and as the tap penetrates deeper into the hole, the body will slide downward with it and will be guided vertically by the fit of the magnets in the two holes enclosing them. In such circumstances, the guide can stay in position until the tap end has bottomed in the hole.

From the foregoing, it will be apparent that the cylindrical magnets act as a pair of guide pillars secured magnetically to the work surface. On them can slide the body of the tap guide. Since the end faces of the magnets are machined square with axis, the body will be guided in a truly vertical direction. The V-block on the body allows the tap shank to slide axially or be rotated in it. The whole effect is to produce an efficient and flexible tool which overcomes an awkward problem in a simple manner.

### Making adjustable struts

by C. T. Bower

Large castings mounted on planing and shaping machine tables must be supported adequately against the cutting forces to prevent them from deflecting sideways and from being shifted. Struts are used for this and are usually made adjustable for length. While



## **Shop Hints**

commercial struts are available, the average machine operator never has enough of them to cope with the unusually big job when it comes along.

A simply made adjustable strut which can be made up quickly by the average machinist is illustrated. It comprises a length of screwed stud stock A, a nut and a length of steel tube. The tube is flattened at one end as at B and squared off so that it makes non-rolling contact with a stop block C clamped to the machine table. The outer end of the screwed stock is rounded off to make point contact with the workpiece D.

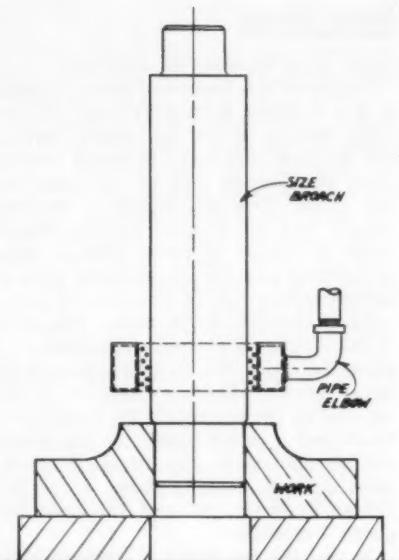
By adjusting the nut on the screwed stock, the length of the strut can be adjusted to suit various jobs. By standardizing on one tube and screw stock diameter, the tubular parts and the threaded parts can be interchanged with one another and can be of varying lengths so that suitable struts can be assembled for various pieces of work. In use, it is advisable to have the minimum length of thread protruding from the tube end, in the interests of rigidity.

An alternative form of construction is to weld the nut permanently to the end of the tube and to provide a pair of opposed flats on the periphery of the threaded rod, for engagement with a wrench. With this, the threaded strut can be tightened firmly by applying a wrench to the flats. Care should be exercised, however, to avoid tipping the work and lifting it clear of the machine table; the strut should support the work without putting a strain on it.

### **Oil ring solves broaching problem**

by Roger Isetts

When finish size broaching the bores on some critical gears it was discovered that the finish obtained was unsatisfactory. The broach seemed to be scoring, causing ridges and tool marks in the workpiece. At first it was thought that



the broach itself did not have a sufficient number of teeth. However, on further study and trial and error, it was found that the broach was not getting sufficient coolant, in this case black cutting oil.

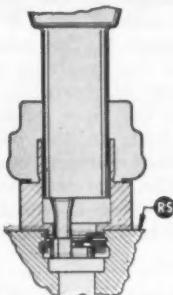
It was decided that a flow of oil completely surrounding the broach was necessary in order to secure the desired finish. We made a hollow ring with a number of small holes in the inner periphery. A standard pipe elbow was brazed to the outer diameter of the ring as an inlet for the oil. It was found that the oil spraying on the broach in a complete circle tended to cool the broach and carry away the chips, so that an excellent, highly accurate finish was the result. This solved a vexing problem quickly and with a minimum of expense.

### **Parting-off aid**

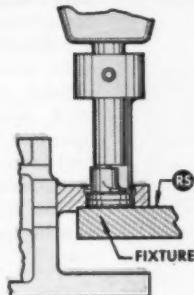
by C. T. Bower

When parting off on capstan or turret lathe, operators injure their fingers by holding the revolving workpiece A just

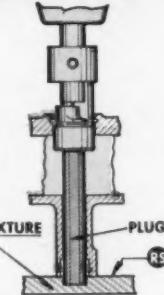
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B) Cuts groove in bore located in protruding member of workpiece. Reference surface on under side of protrusion.



C) Cuts grooves in two bores of different diameters from same reference surface. Tool banks on reference surface. Then workpiece is reversed and tool banks on plug.

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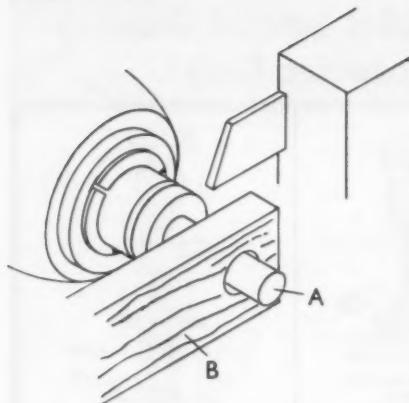
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## Shop Hints



before it is severed by the parting tool. The alternative is to let the piece drop

into the swarf tray from which it must be retrieved by expending much time and trouble.

A simple gadget which will catch the part without damage to the fingers comprises a small stick of wood **B** with a hole drilled through it. The hole fits over some part of the revolving component, with plenty of clearance. The stick is applied to the piece while the operator finally feeds in the parting tool through the short distance required for severing it. The part will remain in the hole in the piece of wood and can be transferred to the storage bin or tray.

This device reduces the risk of dermatitis of the fingers arising from coolant running on them since the hand is kept well clear of the coolant jet.

## If there's a Problem, there's an Answer by Harold D. Rhodenbaugh

Boring tool maintenance on Gorton and Bechelor automatics is a problem as well as an expense when hand grinding a tool to produce each individual hole as the occasion demands.

Figure 1 shows top view only of boring tool submitted with machine tool layout. This tool made from  $5/16" \times 5/16" \times 6"$  hss blank has approximately only one and one-half inches of tool life from cutting end. At the most, this tool can be sharpened approximately three times before going out of dimension. Should the tool break or chip, the entire business end must be made from scratch and when the life of the tool is expended on the above machines there are four inches of hss tool bit of no

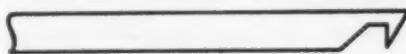
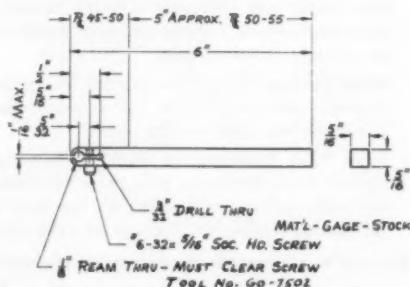


FIG. 1



GORTON BORING TOOL HOLDER

FIG. 2

further value unless adapted to other machines.

Figure 2 shows a method of eliminating the above waste. This boring tool



FIG. 3

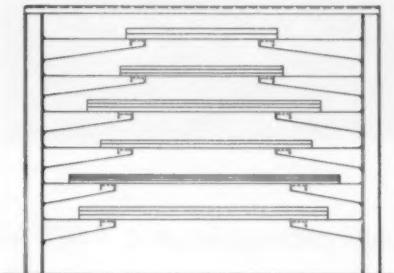
## Shop Hints

holder is designed to take boring tool bits that can be easily and quickly adjusted to depth. The bits, see figure 3, are made standard solid carbide blanks designed for extended tool life at a minimum cost.

### Plate storage features selectivity

by Roger Johnson

Storage for miscellaneous sizes and thicknesses of steel plate for lift truck handling can be provided simply as shown here.

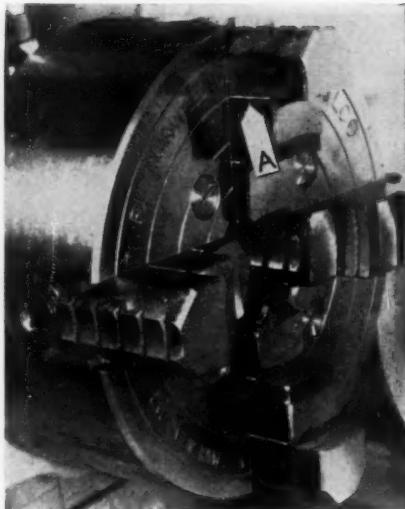


A welded frame of steel channel or angles carries tapered gussets that are welded to both front and rear uprights. The gussets are connected from front to rear by steel channels to form a convenient platform for various widths of plates. The selective removal of any stack of plates can be performed simply and easily with the help of a fork lift truck, be it hand operated or power driven.

### Marks help chuck jaw setting

by C. T. Bower

When adjusting the jaws of an independent chuck, the operator sets the steps approximately to the required diameter by trying to align them with the concentric rings inscribed on the face of the body. He usually has to make several attempts before hitting on the approximately correct setting and each setting requires that he lift up the work



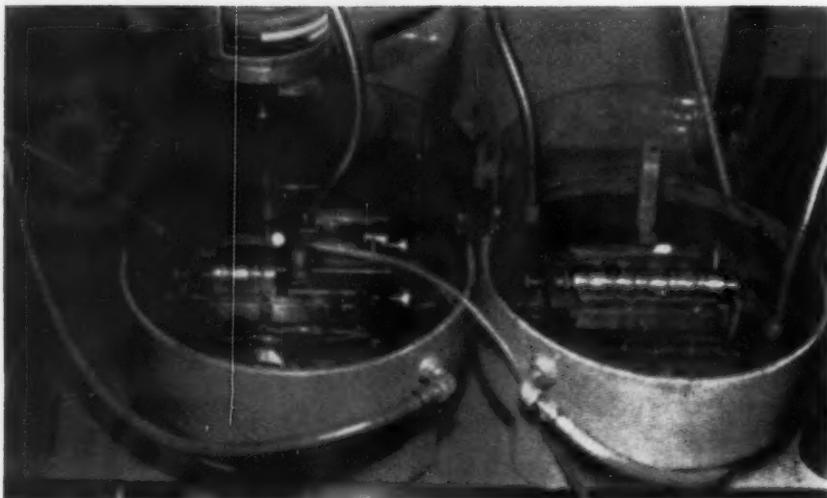
and present it to the jaws and then put it down.

Lifting and putting down a small job is not arduous on small diameter chucks, but on chucks of 12 ins. and over, the labor involved can be heavy. Some manufacturers of chucks indicate the diameters of the concentric rings on the chuck body face by stamping figures thereon. If chucks are not thus marked, it is a useful idea to stamp the figures. Knowing the diameter of the work, the jaws can then be pre-set so that it will fit in them at the first attempt.

A further refinement which will assist rapid jaw setting is to scribe lines on the sides of the jaws, as shown in the illustration. The lines indicate the positions of the jaw steps and can be aligned accurately with the concentric rings on the body.

Black, case-hardened jaw surfaces can be marked by using a carbide tipped scriber. Alternatively, jaws which are ground to a high finish on the sides can be coated with marking-out paint and the lines scratched therein.

The End



*new ultrasonic machine cuts rectangular slot .050" wide*

## **Carbide Grit and Air Bubbles Bombard**

BECAUSE high-speed jet aircraft are so responsive to slight changes in their ailerons, rudders or elevators, precise amounts of hydraulic fluid are required to move these controls.

Chance Vought Aircraft, Inc., had a need for a sleeve containing several precision rectangular-shaped holes to feed this hydraulic fluid into the control system at exact rates. After experimenting for more than a year with various methods of machining these holes, the company's tool research engineers solved the problem by using an ultrasonic machine whose tiny "bit" cut its way through the steel sleeve by

bombarding it with minute boron carbide grit and air bubbles.

The job called for a rectangular slot .050" wide and .125" long for one type sleeve and .030" x .125" for another. Extreme tolerances were set up both as to dimensions and locations of the slots since the amount of fluid fed through the holes was exactly metered.

Chance Vought first tried to make the slot by piercing the hole slightly undersize and finishing with a shaving operation. This produced a bad breakout on the inside diameter, which was the most important part of the orifice in terms of oil flow. The second



By **William W. Wood**  
Tool Research Engineer,  
Chance Vought Aircraft, Inc.

- *tool bit oscillates 30,000 times a second*
- *no burrs or breakouts*
- *corners held to a .002 maximum radius*
- *gages read to .0001 with a .003 range*

and .125" in hydraulic fluid type sleeve

## Holes Through Steel Aircraft Sleeve

method was to machine three sleeves with the orifices milled into the edges of two, then join the trio together. This failed because a perfect fit, preventing fluid leakage, could not be attained.

It was then decided to try a method of ultrasonic machining with a machine called a Cavitron. This method involves use of a high frequency alternating electrical current which could be made to oscillate a bit the size of the desired orifice 30,000 times a second. Instead of riding directly on the metal sleeve to be pierced, the bit is kept immersed in an abrasive slurry

of boron carbide grit suspended in water. The high speed movements of the bit strike the grit and drive it against the surface of the sleeve, giving it an acceleration as high as 150,000 times gravity.

This boron carbide bombards the surface, creating a series of cavities and high points. When the tool tip's ultrasonic waves travel through the water they produce compressions and vacuums, the latter forming small bubbles of vapor. This is called cavitation, which creates tremendous pressures when the bubbles collapse. These pressures break off the high points of

metal, so that the cutting process is more rapid than simple abrasion.

Because the above action wears away the tool faster than the hole, a rough cut has to be made first, then a new bit is brazed to the vibrator unit and an exact hole made to fit specifications. At no time during this cutting process does the bit touch the metal sleeve being pierced; all of the work is done by the boron grits and air bubbles.

Chance Vought tool engineers adapted the cavitron machine to do the job in a matter of a couple of weeks—a task that had baffled tooling men for months before ultrasonics was put to work. The machine had two work chucks and abrasive-coolant collectors, one for a heavy 280 grit abrasive for the rough cut and the other for 800-grit for the finished slot. The slurry was mixed of about 60% grit and 40% water and used over and over again.

This slurry has five functions: (1.) Supply water to effect cavitation; (2.) Water for cooling the material; (3.) Water to wash out small steel particles being removed from the work; (4.) Supply grit to rough up the surface so cavitation would be accelerated; (5.) Supply grit to give a fine surface finish on the side of the tool as it cuts through the slot.

As previously pointed out, the slots to be cut had to be exact tolerances. Corners had to be sharp to a .002 maximum radius, the slots symmetrical about the centerline to .001, sides of the slot straight within .0002 at the internal diameter and the four edges of each orifice to be perpendicular within .001 f. i. r. at the i. d. There could be no burrs or breakouts and the maxi-

mum allowable stagger of the orifices could not exceed .001".

Specially-built brass jigs to resist corrosive and erosive action of the slurry had to be used. These jigs located the sleeves axially, rotationally, and symmetrically about the centerline. The jig was a V-block with a diamond-pin in the bottom for rotational alignment and an end plate positioning the sleeve axially by fitting against a ground shoulder of the sleeve. Clamps were used to secure the sleeve against the V and to insure proper fitting against the end plate.

Sheffield plunjet air gages were used in conjunction with a Sheffield column-type Precisionaire gage to locate the tool bit relative to the sleeve prior to machining. These gages could be read to .0001 and had a range of .003. The plunjets were fitted into holders which were bolted to the end plate and the edge of the V-block, thus insuring the proper alignment.

It was important that the tool bit be attached securely to the tool holder. Not only was continuity (free of cracks and gaps) necessary between the two components, but it was essential that the axis of the bit be paralleled with the ways of the vertical head. The former was maintained by brazing the tool bit to the tool holder in a specially built jig. The latter was accomplished by movement of the plunjet across the bit both laterally and longitudinally. Any slight misalignment was corrected by a push with the finger or a slight tap with a hammer.

Inspection was made with a 50-power microscope at the i. d. of the sleeve by viewing through an orifice

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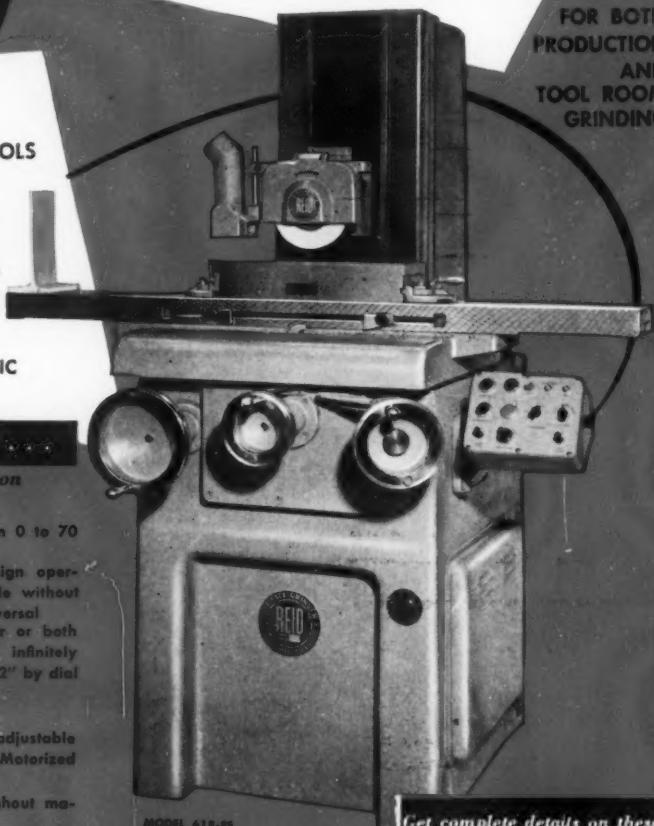
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UNBIASED ANALYSIS OF PORTABLE TOOL PROBLEMS

Encircle No. 3C on Card, Opposite Page 65

November, 1955

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## carbides?

IMPELLER HUB — 4" diam., 1 1/4" long, from SAE 1146 annealed steel forging. JOB ANALYSIS determined multiple-spindle chucks with ALL CARBIDE tooling.

11 operations on first side, on 6" Acme-Gridley 8-spindle chuck with double indexing and duplicate tooling. 2 pieces per cycle in 22 1/2 seconds machine time — 320 pieces per hour.

17 operations on other side on single indexing 6" Acme-Gridley 8-spindle chuck. 26 seconds machine time — 138 pieces per hour.



## high speed?

SEAL RING — 1/2" thick, from 2 1/2" diam. steel 6150 annealed. JOB ANALYSIS classed this as single-spindle job with HSS tooling.

5 shoulders rough and finish-formed to .002 tolerance, seat diam. held to .0005 tolerance, on 3 1/2" single-spindle Acme-Gridley bar-type turret lathe. 7 minutes machine time — 8 (plus) pieces per hour. Spindle speed automatically changed 4 times during cycle to provide suitable speeds and feeds for required finish.



## or BOTH



SHAFT — 7 3/4" long, from 1 1/8" diam. steel 6250 annealed. JOB ANALYSIS indicated single-spindle bar-type turret lathe, with part CARBIDE and part HSS tooling.

10 operations including deep forming, turning and form-turning on 3 1/2" single-spindle Acme-Gridley bar-type turret lathe: 5 minutes 46 seconds machine time — 9 (plus) pieces per hour.

5 automatic changes of spindle speed during the cycle provided speeds and feeds best suited for using both HSS and Carbide tools.

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2. The machine best suited to produce the job most economically.

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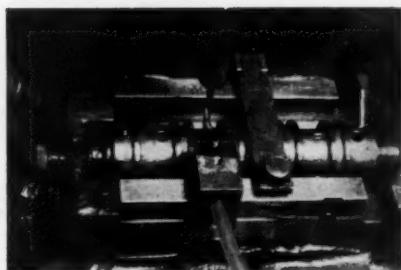
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on one side of the sleeve to the inner edge of another diametrically opposite. All orifice qualities were held to well within tolerance.

An average maximum stagger for four slots was .0005", corner radii were generally held to less than .001", and edge straightness, squareness and symmetry were as close as could be measured with the microscope. Edge sharpness at the i. d. was excellent while a slight taper of around .002" was evident through the depth of the slot. This latter effect was of no consequence, however, for the dimensions at the i.d. were the only ones pertinent to the desired oil flow.

The ultrasonic method of machining has other applications besides the cutting of such precise holes. Special dies of intricate shape may be machined. Hardness of the material is not im-



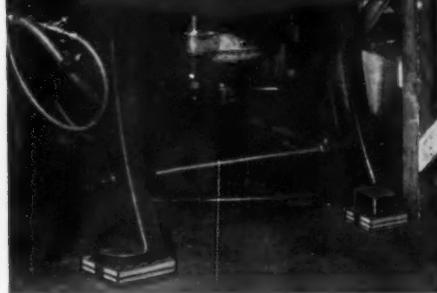
Closeup of sleeve being cut by ultrasonic method. Critical-tolerance holes were located at base of oval-shaped bath to the left of the crossbar brace. The lateral plunjet lockup is in the center foreground.

portant, so that dies or parts may be machined after heat treatment, thereby removing the age-old problem of distortion after heat treating. In fact, the harder materials are often cut more rapidly.

The End

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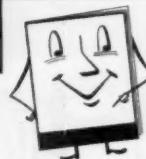
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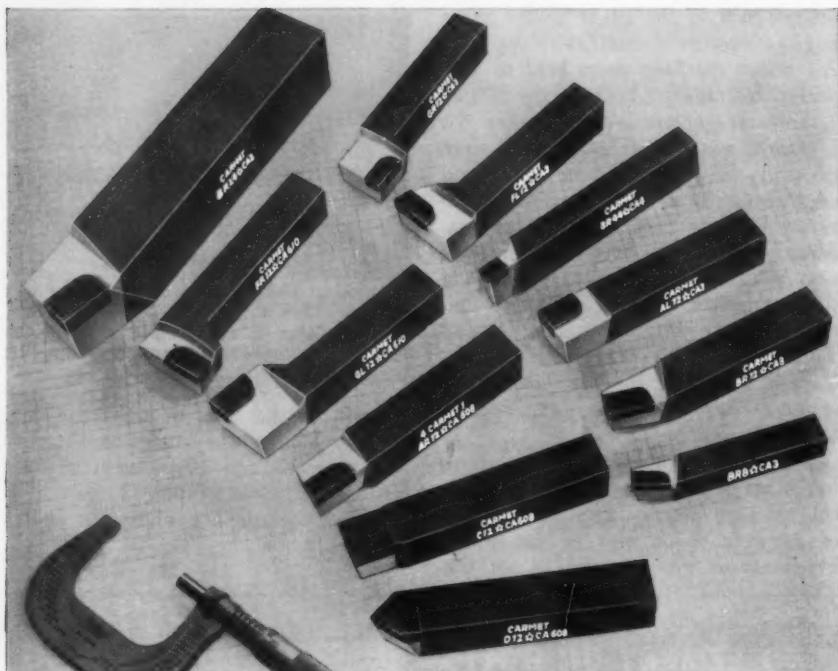


**BOOKLET** describes this engineered (patented) mounting pad. Ask for the AIR-LOC booklet from Clark, Cutler, McDermott Co., W. Central Street, Franklin, Mass.

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November, 1955

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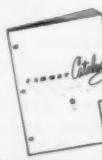


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We specialize in precision preforming of Carmet carbide metals to *any* shape for special wear-resistance needs, such as dies, gage blanks, etc. Let us quote on *your* requirements.

**WRITE FOR YOUR COPIES OF  
THESE HELPFUL BOOKLETS**



**METHODS  
MANUAL**  
20 pages on speeds,  
feeds, cuts, etc.



**CARMET  
CATALOG**  
36 pages; grades,  
tool styles,  
sizes, etc.

**ADDRESS DEPT. MB-71**

WAD 2270

# CARMET®

The Allegheny Ludlum line of Carmet Carbide Tools is *complete*—every style, size and grade you may need for any cutting job in the shop. If you make your own tools, a full line of blanks is available, too—as well as all necessary sizes of A-L Shank Steel. Extensive stocks of Carmet standard tools and blanks are carried in Distributors' warehouses coast to coast, and special tools are available to order. • Just remember, for best performance on any application, use Carmet! Allegheny Ludlum Steel Corporation, Carmet Division, Wanda and Jarvis Avenues, Detroit 20, Michigan.

For **ALL** your **CARBIDE** needs, call  
**Allegheny Ludlum**



Encircle No. 321 on Card, Opposite Page 65

MACHINE and TOOL BLUE BOOK

"We've tried them all...  
SUPREME is the best  
chuck made"



This is the kind of testimonial we get every day on our Supreme Brand Chucks. Users report getting more production, more accurate work, more all-around satisfactory performance from Supreme. One fellow down in Texas even writes that he removes all chucks except Supreme that come on new tools he buys and replaces them with Supreme. He says—"We do

some tough jobs and only from Supreme Chucks do we get really top service."

This kind of enthusiasm warrants your attention. Ask your distributor to let you try a Supreme Brand Chuck on one of your own machines. You'll find out in a hurry why more and more tool experts are saying—"Supreme is the best chuck made."

THERE'S A REASON FOR SUPREME SUPERIORITY

- JAWS NICKEL CHROME MOLY ALLOY STEEL
- KEY HOLES—do not extend into body cavity
- STURDY ONE PIECE GEARED NUT CONSTRUCTION...
- ENTIRE CHUCK BODY HARD-ENED

Toolmakers switching, too

Supreme Chucks are used by 21 out of 24 leading power drill manufacturers on all or a portion of their output.



# Supreme Chucks

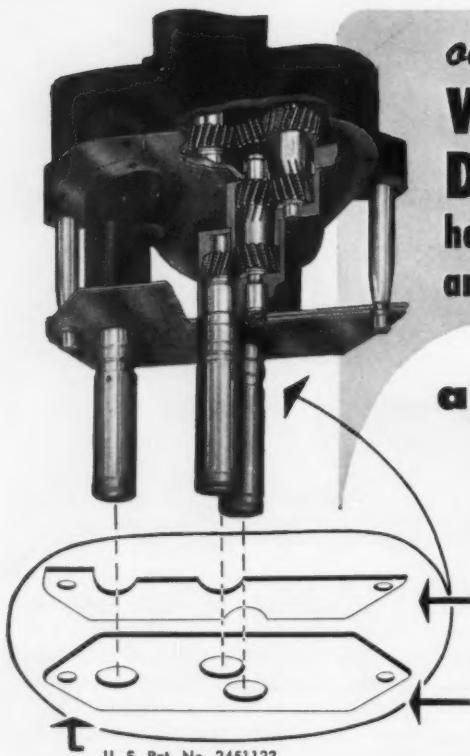
BRAND

2222 S. Calumet Ave., Chicago 16, Illinois

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November, 1955

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only  
**WISCONSIN**  
**DRILL HEADS**  
have both Locating  
and Locking Templates

**an Exclusive  
Patented  
Feature**

**1 Locating Template**

Each spindle swings into half-holes of locating template for fast, accurate positioning.

**2 Locking Template**

Full-hole template fits over spindles, locking them into exact position.

**Other Wisconsin Drill Head Features**

**WIDE RANGE**—Each spindle has 3 centers to provide maximum range of bolt circle adjustments. U. S. Pat. No 2441722.

**LONG LIFE**—Helical gears and other moving parts are hardened to resist wear.

**STANDARD PARTS**—Replacement parts for all standard models always in stock.

In addition to Standard Multiple Adjustable Center Drill Heads, Wisconsin builds Special Fixed Center Drill Heads, Lead-Screw Tapping Units, Fixture Bases, Special Machines — both Index and Transfer Type.

Write for Name of Nearest Representative



**WISCONSIN DRILL HEAD CO.**

4981 N. 124th STREET • BUTLER, WISCONSIN



# Modern Tools in Action

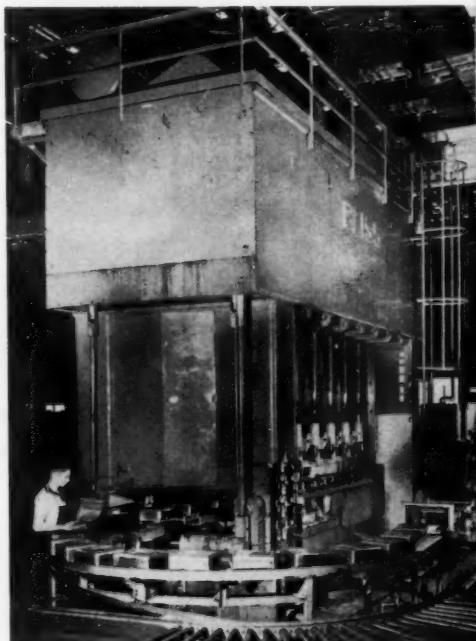
## Three Presses Produce All GE Refrigerator Pans and Shelves

Three Bliss transfer feed presses, recently installed at Appliance Park, Louisville, Ky., produce all of the refrigerator pans and shelves General Electric needs for its annual output of more than a half million refrigerators.

Production of these parts formerly required the services of two or three vendors, increasing the costs of dies and labor and creating difficult expediting problems. Perhaps most significant, however, is the fact that with the automatic coil handling equipment Bliss has designed for these presses, General Electric is able to produce its stampings directly from regular mill coils.

A 700-ton, seven-station transfer feed press (with powerized coil cradle,

An endless parade of refrigerator pans, twelve every minute through two shifts, marches out of the 700-ton Bliss transfer feed press and onto the conveyor. Next stop: pickling and enameling.





# Strippers Cut Costs

## RUBBER STRIPPER



Stripping with R-B rubber strippers or R-B rubber covered spring strippers eliminates costly metal strippers. Both types of R-B strippers serve the same purpose—rubber strippers are used with smaller punches having shank diameters up to and including  $\frac{5}{8}$ "; rubber covered spring strippers are recommended for punch shank diameters larger than  $\frac{5}{8}$ ". Use R-B strippers—to save the cost of making strippers—to substantially reduce installation time—for reduced maintenance.

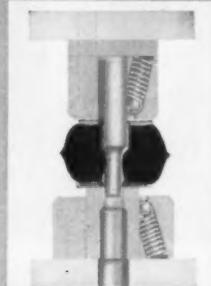
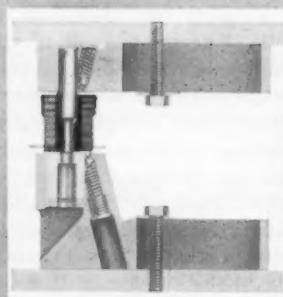


Illustration above shows rubber stripper on punch shank. In this type of application R-B strippers are held to punch shank by friction.

## RUBBER COVERED SPRING STRIPPER



To the right is a cross section illustration showing how rubber covered spring strippers (also rubber strippers) are used with R-B Flex-Mount retainers.



Use R-B Engineering Service for your Tough Piercing Problems

**RICHARD BROTHERS PUNCH DIVISION**  
ALLIED PRODUCTS CORPORATION  
DEPT. 82 12821 BURT RD. DETROIT 23, MICH.

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NAME \_\_\_\_\_ TITLE \_\_\_\_\_

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## ALSO PRODUCED IN OTHER ALLIED PLANTS

SPECIAL COLD FORGED PARTS

FERROUS POWDERED METAL PARTS

STANDARD CAP SCREWS

PRECISION GROUND PARTS

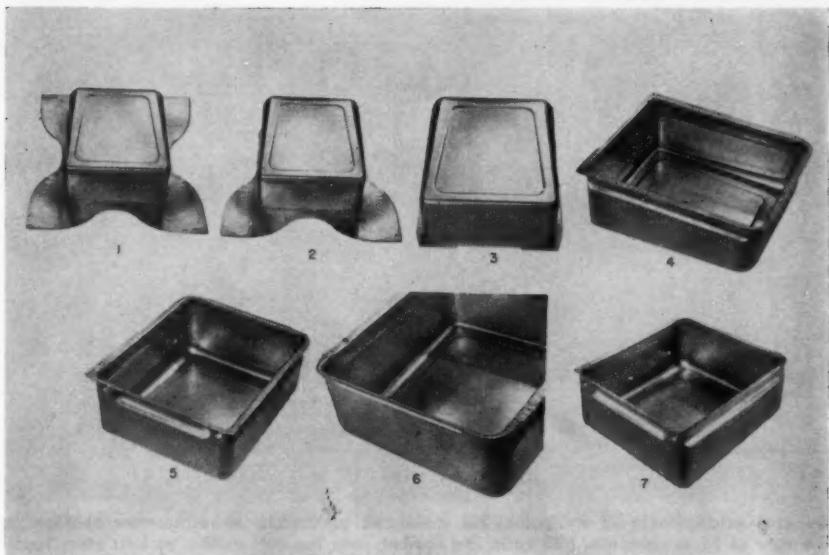
SHEET METAL DIES  
MADE OF FERROUS ALLOYS,

ZINC ALLOYS OR PLASTICS

Encircle No. 324 on Card, Opposite Page 65

MACHINE and TOOL BLUE BOOK

## Modern Tools



Sequence of operations in making crisper pans: (1) cut off 22" by 24" blank and deep draw to size (11 $\frac{1}{4}$ " wide, 13 $\frac{1}{8}$ " long, 5-13/32" deep), (2) rough trim rear half of flange, (3) rough trim front half of flange, (4) cam form sides of pan, (5) cam form front recess and pierce holes in sides, (6) curl rear flange and form indentations in the side flanges, (7) finish trim rear flanges. Scrap from these operations falls through the bolster and onto a conveyor in the pit below.

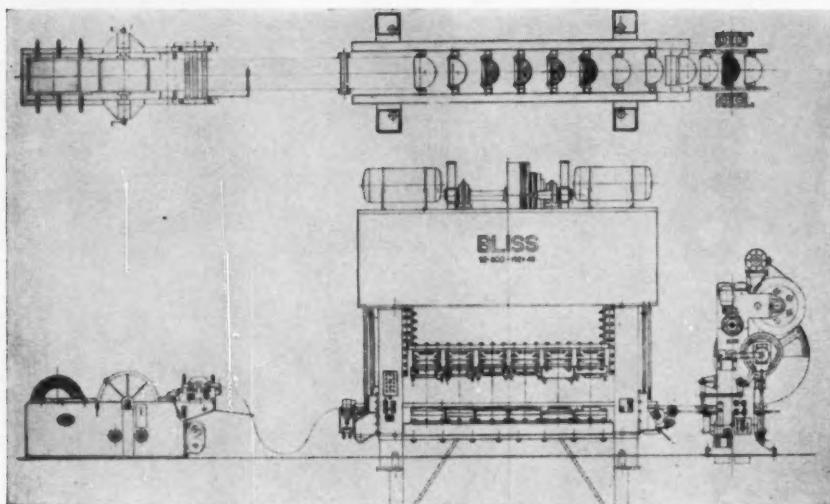
straightener and roll feed) produces 12 deep-drawn refrigerator pans per minute and feeds them off onto a conveyor automatically. Two 800-ton, six-station transfer feed presses each produce rotary and stationary refrigerator shelves at the rate of 15 per minute.

The method of operation is common to all three. Standard mill coils, up to 6000 lb., 54" in diameter, and 22" in width, are loaded onto the coil cradle. The coil winds off the cradle at the desired rate, goes through a motor-driven five-roll straightener and goes into the synchronized roll feed of the press. From there, the strip goes to the first station of the press, where it is

cut off. Transfer feed fingers, driven by cam and gear linkage from the main shaft, move in on the workpiece and carry it to the next station. As the press slide descends, the fingers move out; as it rises, they move in and repeat the cycle. The cycle is continuous, feeding new strip to the first station and delivering a completed part with each stroke of the press.

Each press has seven stations—although only six stations are used on the two 800-ton presses making shelves. The extra station was built in because future production of different models might require an extra station. Each die station is equipped with a "sub-

## Modern Tools



General arrangement of equipment for automatic production of refrigerator shelves at the rate of 15 per minute. Mill coils are loaded onto the coil cradle at left; strip feeds through straightener, into roll feed, and into transfer mechanism of press. After cut-off at first station it moves through five more stations, and then leaves the transfer feed press and is fed into an 800-ton embossing press (right).

slide" which makes it easy to change and adjust dies, and the feed fingers can be replaced to suit special work handling problems. In addition, the

coil cradles are adjustable for various size strip, as are the straighteners.

Two channel bars extend the full length of each press, and the feed

Line begins with standard mill coils loaded onto the coil cradle. Once an attendant threads the end of the coil through the five roll straightener and into the roll feed, operation is automatic. Coil handling on the 700-ton transfer feed press (which makes pans) is essentially the same as it is in this 800-ton shelf line. One attendant is all that is required to operate the big transfer feed presses.





## with the **BLAKE Flute Grinder**

You know that one rake angle gives best cutting in a particular material.

You can *grind* this rake angle into your taps . . . accurately and rapidly . . . with a Blake Flute Grinder.

What's more, this same machine assures precise indexing of the cutting edges . . . and will grind spiral points to the exact angle, location, and depth you need!

It will pay you to investigate.

The Story's  
Here.



Write for these booklets

EDWARD

# BLAKE COMPANY INC.

440 CHERRY ST., WEST NEWTON 65, MASS.

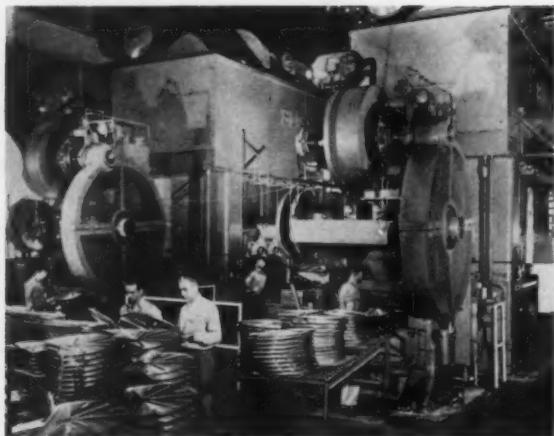
BLACK DIAMOND PRECISION DRILL GRINDERS • SURFACE FINISH STANDARDS

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## **Modern Tools**



Line ends with embossing of shelves. The shelves leave the transfer feed presses and are fed automatically to the embossing press. Unloading is by hand, and the shelves are then loaded on conveyors for further processing.

fingers are bolted to these bars. Two pairs of driving mechanisms, one on each end of the press and linked by yokes to the main shaft, control the movement of the channels. One pair directs their lateral movement (left to right), and the other pair directs the in-and-out movement of the bars.

Each press is essentially a straight side, single-action, double crank press. Lubrication of the various wear surfaces is automatic, with two separate systems for the transfer feed yokes alone. Electrical interlocks in the lube lines will shut down the press if lubrication is not at proper pressure.

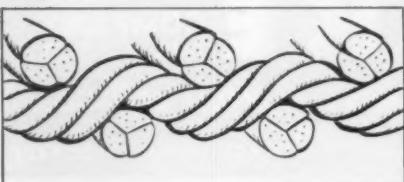
### **Longer Belt Life on High-Speed Shaper**

On a 7500 rpm shaper at the Leader Heel Co. in Lynn, Mass., a new type of high-speed flat belt is giving up to 14 times longer service on the spindle drives, the belt manufacturer claims.

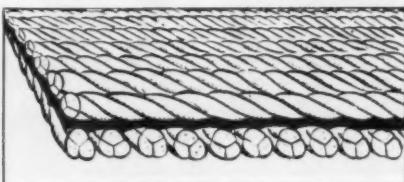
Unlike the high-speed flat belts former-

ly used on the drives, which were woven or braided as shown in figure 1, the Gates Speed-Flex belts that are now in use on the shaper are constructed in layers as in figure 2. The belts feature a layer of strong load-carrying

**Figure 1**



**Figure 2**





**standard for comparison  
...and with high speed steels  
the standard is REX**

Living up to a standard for comparison isn't easy. That's why Crucible lavishes special care on the manufacture of REX® high speed steels . . . to keep REX the *standard* wherever high speed steels are used—as it has been for over half a century.

It's easy to *prove* the superiority of REX. Use it on the job . . . check its size, structure, response to heat treatment, fine tool performance. You'll agree with thousands of other users—you *can't find a high speed steel to outperform REX*.

Remember, REX is made only by Crucible. So call for REX at any Crucible warehouse, or for quick mill delivery. *Crucible Steel Company of America, Henry W. Oliver Building, Pittsburgh 30, Pa.*

**CRUCIBLE**

first name in special purpose steels

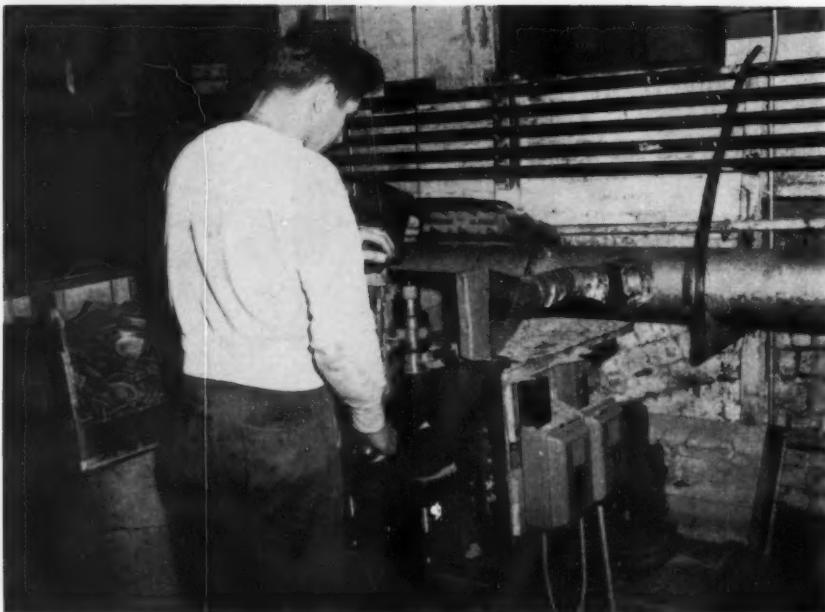
**Crucible Steel Company of America**

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## **Modern Tools**



cords bonded with oil and heat-resistant rubber to a layer of cross cords which act as a non-slip tread. An unusually high coefficient of friction results in a smoother running drive due to its more positive grip on the pulleys. In addition, Leader Heel Co.

found that the continuous, one-piece construction eliminated vibration. The company also reports that the oil and heat resistance prevents deterioration of the belt. Manufacturer is the Gates Rubber Co., Dept. OH, Denver, Colo.

### **Automatic Sorting Gage**

A fully automatic sorting gage, designed and built by Federal Products Corp., Dept. DR 1144 Eddy St., Providence, R.I., is an integral part of the production line of a leading automotive equipment manufacturer. This conveyor-fed gage (Model 144B-45) measures six conditions on automobile push-rods.

They are checked for od and hard-

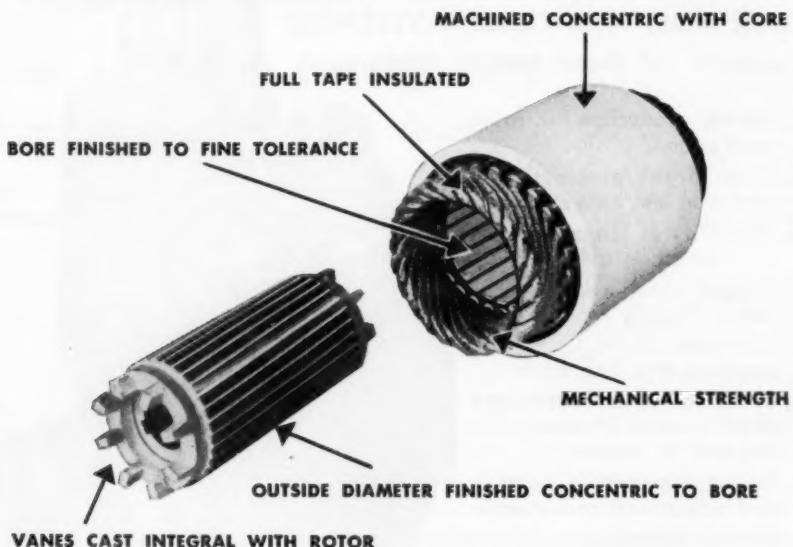
ness at both ends, over-all length and straightness. The parts are sorted into three categories—good, salvage and scrap—at a rate of 2500 per hour. The good parts are fed to a conveyor to continue to the next process, while the scrap and salvage parts are sorted into separate bins out of the production line.

Percentage counters have been provided at each gaging station.

*Serving the Industry Since 1852*



## WOODS SHAFTLESS MOTORS



The application of direct motor drive with WOODS' Shaftless Motors to high-speed spindles brings the peak of motive efficiency at relatively small cost. Conserves space—eliminates belts and gears—fewer wearing parts. The extensive and varied lines of WOODS' Shaftless Motors are available for nearly every class of direct application.

Let us tell you how you can achieve a reduction in production costs by direct motor drive.

### MOTOR DIVISION

**S. A. Woods MACHINE CO.**  
27<sup>o</sup> DAMRELL STREET  
BOSTON 27, MASS.

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**LOW COST — HIGH PRODUCTION**

*Fales* **Automatic Forming  
and Cut-off Lathe**

(U.S. Patent 2,373,155)

**YOUR MOST PROFITABLE INVESTMENT**

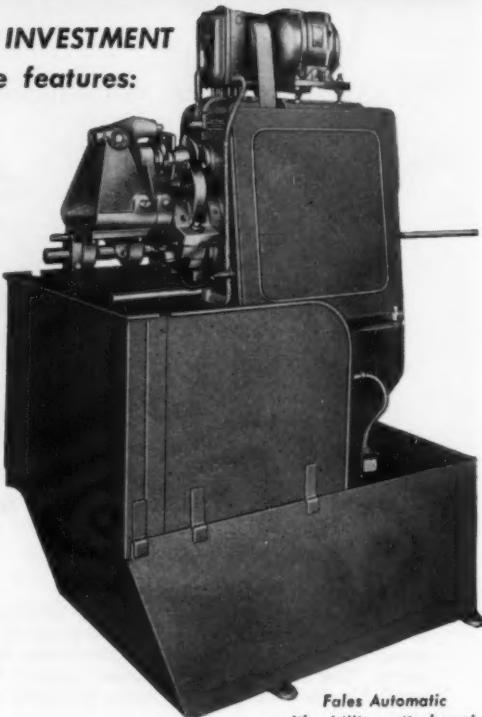
*because of these unique features:*

1. Speedy production . . . rapid work cycle.
2. Chips break automatically and drop into base container.
3. Versatility of job application . . . including axial drilling.
4. Rugged construction permits heavy forming cuts on stock diameters up to 1" — with precision and fine finish.
5. Designed to handle metal and plastics up to 1" round,  $\frac{7}{8}$ " hex and  $\frac{3}{4}$ " square.
6. Easy to operate — controls and adjustments conveniently located in front.
7. Lower cost than machines of comparable capacity.
8. Compact — requires minimum floor space.

**BUILT BY FALES . . .**

over 60 years experience in  
machine design and construction.

Write for complete details



Fales Automatic  
with drilling attachment.

**L. F. Fales Machine Company**

**Northeast Street Walpole, Mass. U. S. A.**

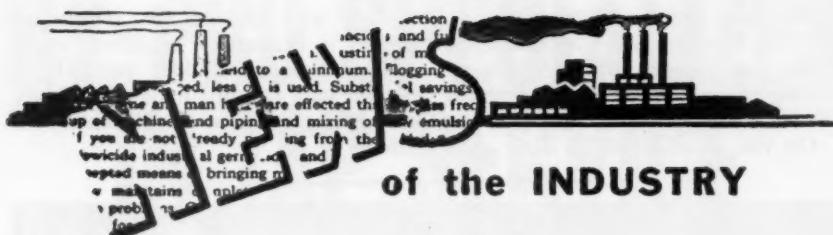
*Established 1894*

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• FALES and SEEYLE DIE PRESSES • PAPER SLITTERS and REWINDERS •  
AUTOMATIC FORMING and CUT-OFF LATHEES • CLICKING MACHINES

Encircle No. 328 on Card, Opposite Page 65

MACHINE and TOOL BLUE BOOK



## of the INDUSTRY

### Space Assignments for 1956 ASTE Show Surpasses Previous High

With several months remaining before the 1956 ASTE Industrial Exposition in Chicago's International Amphitheatre, Exposition officials reveal more space has already been assigned than was used for the entire show when it was held at the same site in 1952.

Harry E. Conrad, executive secretary of the American Society of Tool Engineers, said, "All indications are that the 1956 ASTE show will be the greatest our society has ever sponsored. The interest in exhibiting at the show is

evidence of the reputation for quality attendance the ASTE events have earned through the years."

The trend for a 10 to 12 per cent increase in exhibit space per exhibitor, established earlier, continues as the number of space assignments increases, he added. Information on available exhibit space can be obtained by contacting the American Society of Tool Engineers, (UNiversity 4-7300) 10700 Puritan Ave., Detroit 38, Mich.

### With Gisholt 50 Years

Joseph S. Wright, West Coast service engineering representative of Gisholt Machine Company, recently celebrated the completion of his 50th year with the company, which itself is "only" in its 70th year. Mr. Wright is the second Gisholt employee in length of service, having joined the company on August 27, 1905, as an apprentice. Following his apprenticeship, he became an engine lathe operator, and in 1912 he went on the road for Gisholt in the Detroit area as a demonstrator of the first automatic Gisholt lathe, known as the 20" Automatic. From Detroit, Mr. Wright flew



to Cleveland and then to San Francisco in 1927. In recent years he has served in the Los Angeles area, while representing the company for the entire West Coast.

On the occasion of his 50th anni-

versary with Gisholt, Mr. Wright received a beautifully engraved watch and a diamond studded pen. He is shown with Clifford J. Baxter, Gisholt purchasing agent, at the Machine Tool Show.



**Representatives of Heller Brothers** gathered at the firm's home offices in Newcomers-town, Ohio, recently for a week-long series of meetings on sales and industry developments. The sessions were under the direction of A. M. Thomas, director of sales.

### Three firms merge with Dexco

The Raymac Mfg. Co., Inc., Arc Machining, Inc., and Extractor Corp., a Division of Arc Machining, Inc., have been consolidated with Dexco Corp. Dexco has succeeded to all the rights of, and assumed all of the obligations of the consolidated companies.

The business formerly conducted by the three companies will continue to be operated as heretofore, but under the names of Raymac Division, Arc Machining Division, and Extractor Division of Dexco Corporation.

### Benchmaster inaugurates special machine division

To meet a greater variety of unusual requirements, Benchmaster Manufacturing Company's new special machinery division has been organized to engineer and custom-develop special machines, providing they are related in some way to the present line of milling machines, punch presses, Koil Kradles, roll straighteners or accessory equipment made by the company.

# HY-PRO SPECIALIZES IN TAP SERVICE



**AUTOMATIC TABULATION** in Hy-Pro's "production control unit" insures prompt handling of your order—and guarantees accurate records for your billing.



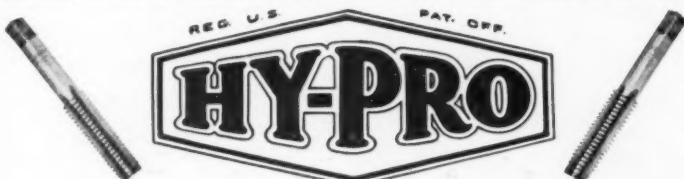
**YOUR TAP ORDERS** are speeded on their way by specialists who know the quickest and safest routes to you and to your distributors.

*... to meet the job  
needs of your shop*

Hy-Pro has specialized in the tap business. It has concentrated its operation on **one line** to better serve tap users. Every step a tap must go through—from design to production and shipment to you—is carefully supervised by Hy-Pro specialists.

Whether your needs are for a special or standard order, it will pay you to contact Hy-Pro.

Get in touch with your local distributor, or call Hy-Pro direct. Hy-Pro offers a full line of top-quality taps, backed by the advantage of specialized service.



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DISTRIBUTORS IN ALL LEADING CITIES

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*A Mechanical Eye to Watch Your Tools*



## Reduce Tool Costs!

**Cross Tool Control Unit  
Automatically Stops  
Machine When Tools  
Need Changing**

U.S. Pat. No. 2,679,038  
Other Patents Pending



**The Cross Tool Control Unit reduces tool costs, decreases machine downtime. Available in four different sizes, it can be used with most types of metalworking equipment.**

**Here's what it does:**

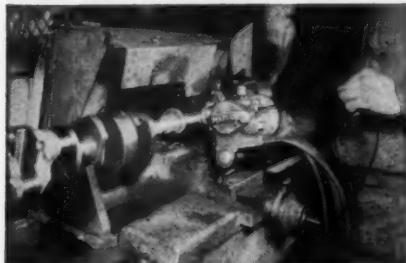
- ★ Provides continuous picture of used and unused tool life and establishes performance standards.
- ★ Decreases downtime by permitting tool changing in groups.
- ★ Reduces scrap by stopping machine before tools lose size.
- ★ Reduces tool grinding costs.

**Write for complete details today.**

*Established 1898*

**THE CROSS CO.**  
DETROIT 7, MICHIGAN  
*Special* MACHINE TOOLS

# when mistakes happen...



**Automotive crankshaft being brought up to inspection standards with metallizing. This automotive manufacturer formerly used plating for this type of salvage, worked one per hour. With metallizing, the salvage operation requires only 5 to 10 minutes per shaft, including surface preparation.**

...and they do in any busy machine shop, there's no need to scrap a mis-machined or otherwise damaged machine part that represents an investment of many expensive man-hours.

Parts like these are brought up to inspection standards quickly, easily and inexpensively with metallizing.

And with the new molybdenum metallizing wire, Sprabond, the only surface preparation required is cleaning. The molybdenum forms a molecular bond with the surface being rebuilt. Little heat is generated, eliminating any danger of warpage.

What's more—users have found that the extreme hardness of the molybdenum coating, and its microscopic porosity which provides superior lubricating characteristics, improve its "wear-ability" over ordinary bearing surfaces as much as 25 times. You haven't just salvaged a part—you've improved it.



## Free Bulletin

Get the full story on metallizing in production salvage. Bulletin 57-C describes and illustrates the procedures, provides data on typical parts, with interesting photo-micrographs showing the unique bonding action of Sprabond Wire. Send for a copy.

The trade name, SPRABOND WIRE, is the property of Metallizing Engineering Co., Inc.

**DON A. WATSON**  
**METALLIZING ENGINEERING CO., INC.**  
1147 Prospect Ave., Westbury, Long Island, N. Y.

Please send me Bulletin 57-C.  
 Please have Metco Field Engineer call.

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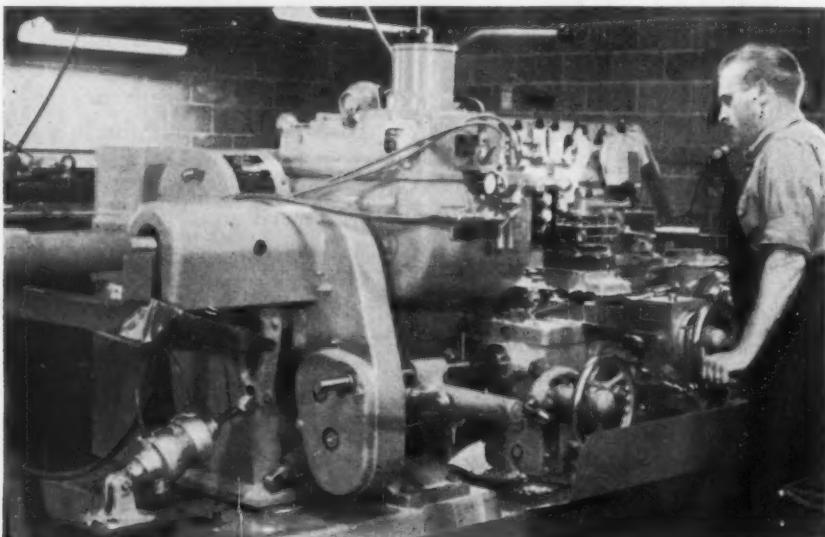
## Metallizing Engineering Co., Inc.

1147 Prospect Ave., Westbury, L. I., New York • cable: METCO  
In Great Britain:  
METALLIZING EQUIPMENT COMPANY, LTD.—Cheadle near Woking, England

## Production Capacity Expanded

Recent installation of new turret lathe and multiple drill press facilities at Modernair Corp., San Leandro, Calif.,

increases the firm's production capacity by more than 20%. The machines have been equipped with air-operated automation devices manufactured by Modernair.

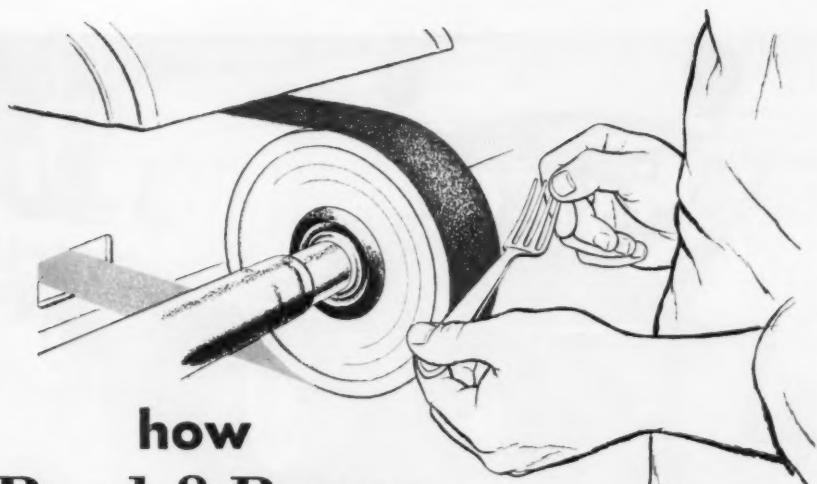


## Barnes Completes New Plant Addition

The W. O. Barnes Co., Inc., Detroit, has completed a 9000 sq. ft. addition to their present plant. The addition plus new equipment will increase manufacturing capacity 30%.

The new 2-story building is of modern design and brick and concrete construction throughout. Loading dock is completely equipped with crane and hoist facilities.





## how **Reed & Barton** **rolled up new finishing records** **for spoons and forks!**

To roll the burred outer edges of nickel silver spoons and forks, Reed & Barton, nationally-famous manufacturers of tableware, employed the most effective method known to them. Yet this method was troublesome, time-consuming and comparatively costly. Abrasive Products Engineers were asked for recommendations. After careful study, their suggestion produced a 30% improvement in overall speed and efficiency of the process by using Jewel Brand Belts. More uniform quality of finishing resulted. Belt breakage was reduced to a minimum.

Here is another typical example of the way Jewel Brand Abrasive Engineers cooperate to produce better, more economical methods of using abrasives. This is an important part of their daily "stock-in-trade" along with a complete line of top-grade Jewel Brand Abrasive Belts. Maybe this combination can help you find a better, more economical way to use abrasives. Call your nearby Jewel Brand Abrasive Engineer or Industrial Distributor, or write . . . Abrasive Products Inc., 527 Pearl Street, South Braintree 85, Massachusetts.



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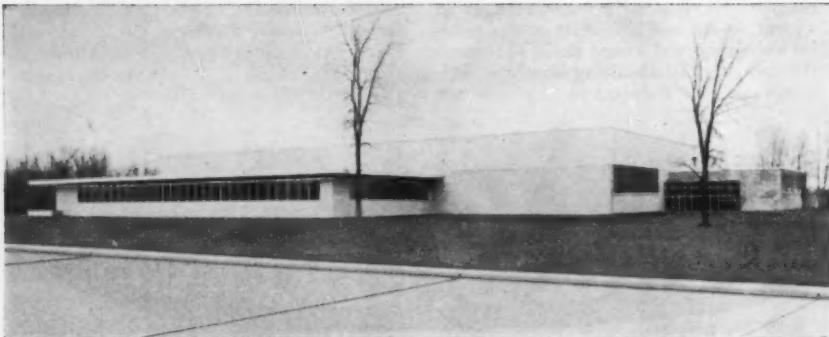
## Demonstration Unit Increases Grinder Sales

Royal Oak Tool & Machine Co., Royal Oak, Mich., manufacturers of the R-O universal form relieving fixture and grinder, have equipped a station wagon with a unit which permits them to take their product to the premises of the prospect.

A demonstration on location is prov-

ing a big stimulant to sales. Although the fixture and grinder weigh 320 pounds, they found that the installation was practical. Rolling tracks permit sliding the unit out over the lowered tail gate. The company anticipates so equipping an entire fleet of demonstrators.

New plant of the Allied Products Corp., Detroit, has recently been completed and occupied. It serves as headquarters for the Richard Bros. Punch Div. and Hercules Punch Div., with all engineering, sales and service activities being centralized here. Fourteen acres of land provide for future expansion.



## F & D starts expansion program

The F & D Machine and Tool Works, Three Rivers, Mass., has announced the initiation of its expansion program. On October 1, the company was reorganized, in that a corporation was established and the name changed to "The F & D Tool Co., Inc."

Management will remain the same, and no change in operating personnel is anticipated. The officers are John

Duda Jr., president; Laurence J. Kinder, vice-president; Frank M. Falk, treasurer.

The entire program was instituted as a means to enlarge and improve production capacity as well as increase stocks.

## Plant expansion program has cost \$13,000,000

A \$13,000,000 plant expansion and



**STOP! VAPOR  
MIST, FOG**

**with MISTKOP  
VAPOR COLLECTORS**

Efficient—low cost—compact MISTKOP vapor collectors can be quickly installed and easily maintained, wherever collection and control of industrial vapors are necessary. MISTKOP vapor collectors save costs in recovered coolants—keep walls, windows, ceilings clean of excess moisture—eliminate fire hazard from uncontrolled vapor. There is a MISTKOP collector to meet your requirements. Write for illustrated folder today.

ALSO A COMPLETE LINE  
OF DUST COLLECTORS



**AGET MANUFACTURING COMPANY**  
1402 EAST CHURCH ST., ADRIAN, MICH.

Encircle No. 331 on Card, Opposite Page 65

November, 1955

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equipment modernization program has been carried out by Associated Spring Corp., Bristol, Conn., since the end of World War II—more than \$4,500,000 of it devoted to the three Bristol divisions.

The company supplies precision mechanical springs and other metal components to many industries. It started, nearly a hundred years ago, making wire hoops for crinoline skirts, and clock springs.

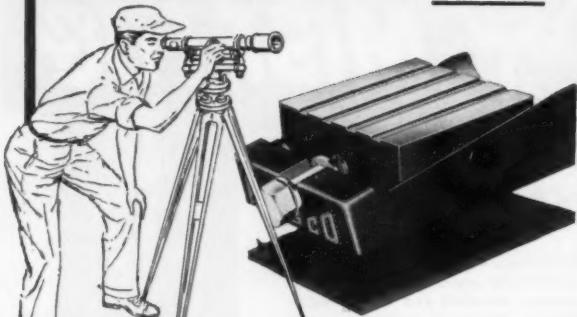
Associated Spring Corporation's eleven

divisions are located in the major industrial centers of the United States and Canada. The whole re-equipment and modernization program has been financed out of earnings; "the company has not had to borrow a dollar to pay for it," said Carlyle F. Barnes, president.

#### **Douglas G. Hawksworth**

Douglas G. Hawksworth, vice president and chief engineer of The Gairing Tool Co. of Detroit, Mich., died recently.

## **SET your machines level and KEEP them level!**



**for better performance  
... less maintenance**

EMPCO Leveling Jacks provide a solid, adjustable support for machine tools, industrial furnaces, tool room and production equipment of all types. Easily installed—easily relocated, Empco Jacks cut maintenance costs . . . Keep machine performance at peak efficiency!

Vi-Sorb Mounting Pads are optional with Empco Jacks. They control vibration from within the machine itself, and reduce transmitted vibrations.

Empco Jacks are available in two styles and 6 models. There's an Empco Jack that will meet your exact requirements!

**WRITE TODAY FOR ILLUSTRATED BULLETIN AND PRICES!**



**THE ENTERPRISE MACHINE PARTS CORPORATION**  
2741 Jerome Avenue • Detroit 12, Michigan

The head that offers  
**EXTRA  
 TAPPING  
 HOURS!**

**built-in features assure  
 continuous operation  
 for longer periods**

On job after job—in shop after shop—the reaction is the same: "Procunier heads are producing and lasting far beyond expectations." And no wonder! They're more than just tappers, they're precision instruments, carefully machined, accurately ground, balanced, pre-tested. Rugged, sensitive, they combine advanced features and advantages that mean just one thing—**more production for less**. Procunier heads give you sustained operation at faster speeds; unparalleled accuracy; fewer broken taps; less spoiled pieces; perfection in produced parts, and less operator fatigue.

Here's why you get **EXTRA TAPPING HOURS**: heads mount rigidly eliminating chatter and vibration; sensitive friction clutch automatically regulates driving pressure; ballbearings assure smoother, longer lasting "driving"; heat treated gears with special gear reversing mechanism; unique tap holding spindle support **PLUS** other important features.

Write for **FREE** Brochure

giving complete details and specifications on the complete line of Procunier Tapping Heads.

**PROCUNIER**  
**Safety Chuck Company**  
**14 So. Clinton St., Dept. 11, Chicago 6, Ill.**

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November, 1955



**Exclusive  
 "Tru-Grip"  
 Tap Holder**

is lighter, smaller in diameter. It affords easier tapping close to walls or shoulders, eliminates "chewed" tap shanks. Holds tap true.

**PROCUNIER SAFETY CHUCK CO.**

**14 So. Clinton St., Chicago 6, Ill. Dept. 11**

Gentlemen: Please send your illustrated brochure giving complete details, specifications and prices on the improved line of Procunier High Speed Tapping Heads.

**Name** ..... **Address** .....

**City** ..... **Zone** ..... **State** .....

### **Hardage L. Andrews**

Hardage L. Andrews, president of Jones & Lamson Machine Co., Springfield, Vt., recently passed away. He was born in 1890 at Boonville, Mo., and graduated from the University of Missouri with a B.S. degree in electrical engineering. After graduation, he was selected for the General Electric test course and assigned to Schenectady.

In 1950, Mr. Andrews was elected an

executive vice president of G. E. He remained in that capacity until the fall of 1951, when he retired from the company. He was appointed as president of Jones & Lamson on June 1st, 1953.

### **Coolant equipment company formed**

A new company, Coolant Equipment Corporation, has been formed to manufacture the Carnes line of coolant handling equipment. The firm is located at Verona, Wis.



Feeding parts of almost every shape and material—at controllable rates—single file—in oriented position—Syntron Parts Feeders provide the most efficient and economical method yet developed for full production feeding of parts in automatic processing set-ups. Electro-magnetic operation—no mechanical wearing parts—easy to install.

**Write for FREE SYNTRON COMPANY Catalogue Data 300 Lexington Ave. Homer City, Pa.**

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MACHINE and TOOL BLUE BOOK



## MILLING MACHINE ARBORS, ADAPTERS, ARBOR SPACERS AND BEARINGS

*Hardened and ground to high standards of accuracy and quality.*

These products are built by long established, reputable West German manufacturers, and tested for performance to American standards. Immediate delivery from New York City stock at low competitive prices.

### Also available:

- Multi purpose vises
- Tapping attachments
- Lathe mandrels
- "Wille-Grip" keyless drill chucks
- Large variety of machine tools



## QUICK CHANGE CHUCKS & COLLETS

*All parts hardened and ground. Simplicity of construction insures trouble-free operation.*



Our headquarters in New York City

Write for complete details and prices to Dept. 303

**M.B.I. EXPORT & IMPORT LTD.**

*A Division of Machinery Builders Inc.*

**475 Grand Concourse, Bronx 51, N. Y.**

"Over 20 years experience in designing and building machinery"

CABLE ADDRESS: Machbuild New York

Phone: MOtt Haven 5-0900



Quick Change Chuck



Quick Change Collet

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## Carboley to develop process for manufacture of diamonds

Responsibility for commercial development of the process for manufacturing man-made diamonds, recently announced by the General Electric Research Laboratory, has been assigned to the company's Carboley Department, Detroit. This department will, in the next few years, bridge the gap between the laboratory and the production line

in an effort to make these diamonds available to American industry.

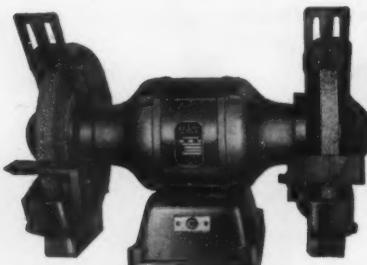
Future commercialization of these industrial diamonds would give U.S. industry an independent, domestic source for this strategic material.

## Lamson & Sessions acquires Kent Machine

Effective recently through exchange of stock, the Lamson & Sessions Co. of Cleveland, O., acquired The Kent Ma-

# BALDOR GRINDERS

### BALL BEARING - TOTALLY ENCLOSED - HEAVY DUTY



Baldor Grinders are available in bench and pedestal types.

More Rugged — Arbor diameter  $\frac{3}{8}$ " and "sealed-for-life" ball bearing Size .05.

More Versatile—Wide clearance between wheels and motor frame permits grinding of large or odd shaped pieces.

Baldor is a basic manufacturer of grinders—even the motors are built by Baldor.

Baldor 10" Series Grinder  $\frac{3}{4}$  h.p., 1 phase, 60 cy., 1725 rpm, 10" wheel. \$134.00.

Baldor Grinders available with wheel sizes from 6" to 12".

Special Carbide Tool Grinder built especially for sharpening carbide tools quickly and accurately. Reversible  $\frac{1}{2}$  h.p., motor withstands repeated overloads. \$149.00.

**BALDOR ELECTRIC COMPANY**  
**4368 DUNCAN AVE.** **ST. LOUIS 10, MO.**

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MACHINE and TOOL BLUE BOOK

# Tool Room Indispensable



## HIGH SPEED HAND DIE GRINDER

*Speeds up  
Tool and  
Die Work!*

Ideal for a great variety of hand operations — die grinding, finishing, touching up, finishing molds, deburring, grinding welds . . . also for many special applications by using special jigs and fixtures.

1/6 H.P., yet weighing only 2½ lbs., easily controlled due to small diameter and excellent balance. Chucking capacity ½", 3/32" and ¼".

Millers Falls Electric Tools are indispensable in the tool room — and many other spots in your plant.

Built with Millers Falls famous New England workmanship, engineered for outstanding performance, long life and trouble-free service, they pay off fast in lowered costs. Let us give you full details and arrange for a free demonstration on your own work.

*Write for full details.*

**MILLERS FALLS COMPANY**

Dept. MT-11 — Greenfield, Mass.



*The Mark of Superiority*

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chine Co. of Cuyahoga Falls, O.

Activities at The Kent Machine Co. will continue under the direction of the following personnel: H. T. Young, general manager; T. S. Daugherty, assistant secretary; Dan Urban, sales manager, concrete machinery; Robert Robinson, sales manager, special machinery; A. G. Walker, chief engineer; Robert Marietta, assistant chief engineer and Lee Pettit, purchasing agent.

### J & L buys Shopmaster

The Jones & Lamson Machine Co., Springfield, Vt., has announced the purchase of Shopmaster, Inc., of Minneapolis, Minn., manufacturers of power tools for the home workshop. A program of diversification has been under consideration by J & L for some time.

### Name change

Harold Hedstrom, president of the Nord Corp. has announced the change

over  
**8,000** Different Selections  
For Immediate Delivery!



Quality-Famous, Heavy Duty  
AIR AND HYDRAULIC

## CYLINDERS

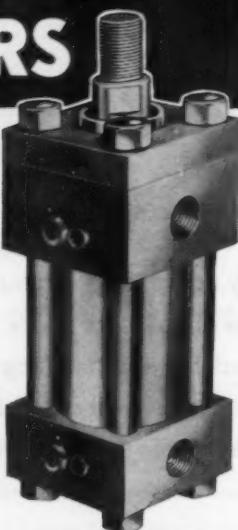
now "in stock" for  
immediate shipment to you  
in popular sizes, mountings

Eliminate costly production delays — speed-up your design and replacement programs — with this greatest quality selection ever offered on such fast delivery service.

**AIR CYLINDERS**, 200 psi, 1½" through 8" bores, strokes up through 36", over 15 popular mountings, cushioned and non-cushioned.

**HYDRAULIC CYLINDERS**, 2000 psi, 1½" through 5" bores, strokes up through 36", over 15 popular mountings, cushioned and non-cushioned.

Larger bores (up through 20" air, 12" hydraulic) and longer strokes (up to 22 feet) available on longer delivery.



Write for Complete  
Data and Prices



**MILLER FLUID POWER COMPANY**

(Formerly Miller Motor Co.)

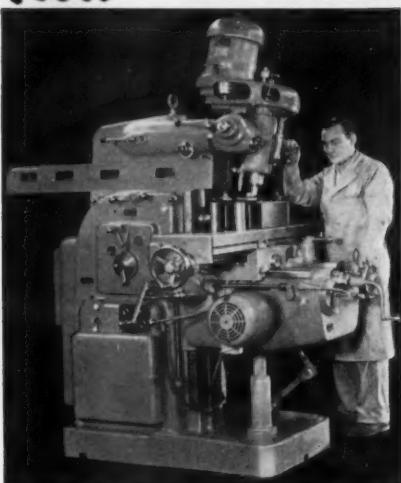
2026 N. Hawthorne Ave., Melrose Park, Ill.

CYLINDERS • BOOSTERS • ACCUMULATORS  
Sales and Service—From Coast To Coast

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MACHINE and TOOL BLUE BOOK

# New GORTON DOUBLE-DUTY MILL PROVIDES SPECIFIC ADVANTAGES



VERTICAL-ANGULAR MILLING

## COMPARE THESE FEATURES

Exclusive Gorton Receptor Ram increases capacity.

Available with 56" table (28" travel), 62" table (34" travel) or 76" table (48" travel).

Horizontal spindle horsepower: 7½, 10 or 10 over 5. Super-speed belt-driven vertical spindle: 1½ over ¾ H. P.

Exclusive removable coolant pan speeds sump cleanout and coolant interchange.

Interchangeable Assembly Unit Construction offers multiple advantages.

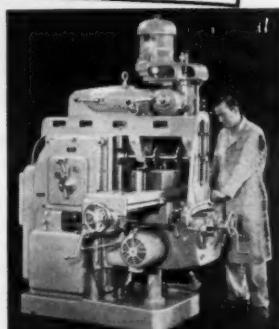
Rigid support for work with 24½" bearing spread on knee and large square lock bearing guides.

Mechanical and dual electrical overload protection for cutters and work.

• COMBINES RUGGED DESIGN,  
TOP PERFORMANCE WITH  
TOOL ROOM ACCURACY

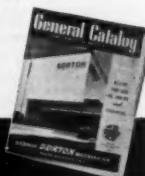
• For horizontal milling and  
vertical or angular milling  
without re-locating work

As a horizontal it does conventional and climb milling up to 2,000 R.P.M. As a vertical-universal, it does precision work up to 5,600 R.P.M.



HORIZONTAL MILLING

Write for  
Complete  
Catalog  
1655-  
1411.



GEORGE **GORTON** MACHINE CO.

1411 RACINE STREET

RACINE, WISCONSIN, U.S.A.

Tracer-Controlled Pantographs, Duplicators—standard and special...Horizontal and Vertical Mills, Swiss-Type Screw Machines, Tool Grinders, Small Tools and Accessories.

of name from Nord International Corporation to Nord Corporation. The company has moved to larger quarters, from 449 Central Ave., Orange, N. J. to 18 Spruce St., Nutley, N. J.

#### West Coast management transferred

The Union Twist Drill Co. has taken over the operation and direct management of its entire West Coast operations formerly under the direction of the E. B. Sutton Co. Direct Factory Branch

Offices and Warehouses will continue to be located at Los Angeles, San Francisco and Seattle.

#### Carbide Tool Company formed

A new Detroit company has been organized to manufacture solid carbide cutting tools, the "Grawell Carbide Tool Company."

Raymond C. Heartwell, Lawrence J. Heartwell, and Anne E. Graham are partners in the firm, which is located at 5680 Twelfth St., Detroit 8, Mich.

FEEDS to 8-in.  
per MINUTE  
WITH FASTER CUTTING  
MORE DURABLE  
SUPER CARBIDE DRILLS

Super Carbide Drills are *faster cutting*, because our special v-ground point breaks up metal structure easier, acts like a lead hole to permit a bigger bite. The tip blends into the spiral and flutes are polished to provide easier chip relief, less friction — for *cooler cutting, longer life*. And, the Super's radial-ground relief *reduces fractures*. Heavier carbide tip *cuts breakage*, provides *more regrinding stock*. Heavy land and web provide *much greater strength*. Easy to understand why Super Drills can maintain *feeds up to 8" per minute* (cast iron) and pare downtime losses.

This improved drill design is stocked by leading tool supply houses in every industrial area, in fractional, wire or letter sizes, with straight or Morse taper shanks and in eight types, solid carbide or tipped.

WRITE NOW FOR FREE, NEW  
92-PAGE CARBIDE TOOL CATALOG

**SUPER TOOL CO.**

DEPT. NO. 347 21650 HOOVER RD. • DETROIT 13, MICHIGAN  
5210 SAN FERNANDO RD. • LOS ANGELES 3, CALIF.

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MACHINE and TOOL BLUE BOOK

## New California plant for Norton Company

A new plant for the manufacture of grinding wheels is being equipped and will be opened January 1, 1956 at Santa Clara, Calif., by Norton Co., of Worcester, Mass. The one story plant at 2555 Lafayette St., 45 miles south of downtown San Francisco, was purchased last fall.

George A. Garrison has been named plant manager. Garrison was formerly



superintendent of packing and shipping at the Worcester plant.

Others who will assume management posts are Lennert G. Jacobson, office manager, Fletcher G. Bevis, accountant, Duane Barnhart, control engineer, Frederick H. Mattson, foreman of mixing, molding and firing, and Martin T. Johnson, foreman of finishing operations, packing and shipping. Only supervisory personnel will be taken to Santa Clara from Worcester.

## Stehle appointed sales manager

Etco Tool Co., Brooklyn, N.Y., has appointed Arthur E. Stehle as national sales manager. Otto Schmidt will take Stehle's former post as head of the Chicago Sales office.



Arthur E. Stehle

## INDEXING TURNTABLES



C  
A  
M  
S



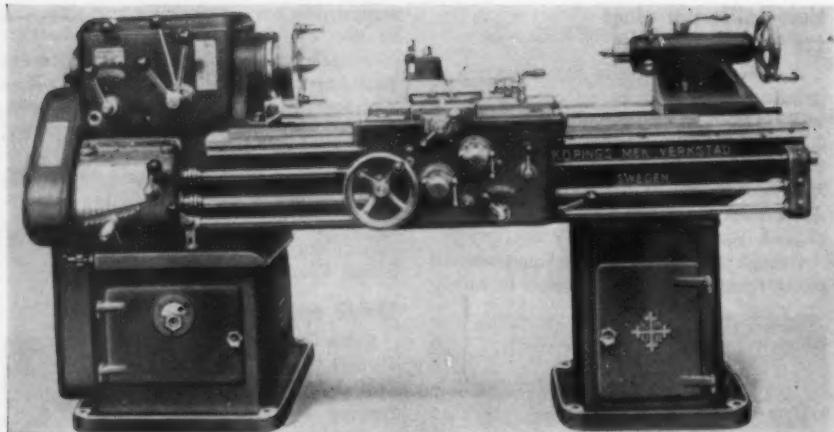
Eisler makes over 100 different types of indexing mechanisms for spraying, glass insulators, melting and glass glazing with rotating stations and motorized or hand operated. Rotating tables of all kinds for over 35 years. We supply any part or complete equipment and we make special turntables and cams to your specifications. You are invited to see our showroom and see for yourself our many models on display. Write or call for our new catalog No. 88-55.

CHARLES EISLER JR., PRESIDENT  
EISLER ENGINEERING CO., INC., 762 So. 13th Street, Newark, N. J.

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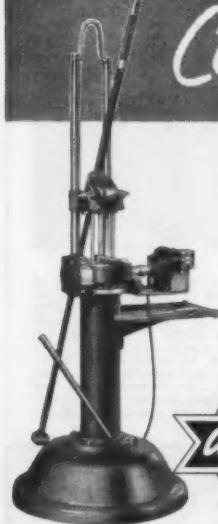
## Homstrand Appointed U.S. Agent for Koping Lathes and Milling Machines

Homstrand, Inc., Larchmont, N. Y., has been appointed exclusive U. S. agent for Koping lathes and milling machines. Representative models of the Swedish

POWER SCRAPER

*Cuts Production Costs...*

3 HOUR JOB CUT TO 50 MINUTES



One manufacturer was scraping flat pieces measuring 18 by 24 inches . . . each piece requiring 5 hours to scrape by hand. An Anderson Power Scraper cut scraping time to 50 minutes! That meant a substantial saving in production costs and another happy Anderson customer. Let us help you estimate how much this portable, easy-to-use power scraper will save for you.

Today, Write for Bulletin 11-5

*Anderson*

ANDERSON BROS. MFG. CO., Rockford, Ill.

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MACHINE and TOOL BLUE BOOK

# Logan

## air valves

A model to effectively meet practically any air control valve requirement.

Designed to assure maximum efficiency with a minimum of maintenance.

### most models stock delivery

Logan Air Control Valves are designed and built to assure an unusually high standard of performance plus maximum convenience for the design engineer, machine operator and maintenance man. Every construction detail has been planned to make Logan valves easy to install, to use and to service.

Thousands of manufacturers have found Logan valves to be the answer to their production problems. Logan engineers are at your service to help you achieve better, more efficient production. Following are a few facts about Logan Air Control Valves:

Standard valve models are available in a wide range of mounting types, means of actuation, type of handle and sizes.

Can be located in any position on horizontal, vertical or other surfaces. Mounting is simple.

Construction is compact—permits installation in limited space, close to other equipment.

All valves are built for operating pressures to 150 psi. For reuse, many Logan valves can easily be converted to other types. Parts are interchangeable.

The wide choice of types of control makes it possible to provide the most convenient type of actuation for every problem of regulation.

Effortless control is provided in all models. Balanced construction produces equal pressure on both sides of piston.

Valve piston is light in weight, permitting high-speed operation without excessive vibration or wear.

Long-life synthetic rubber cup packings on valve piston assure positive action without leakage.

Piston-type valve with sliding piston eliminates valve seats; minimizes wear.

Self-cleaning construction means longer sealing life.

Valves are unusually easy to repair or recondition. Simply by removing cover screws—covers and valve piston can be quickly removed and replaced.

If a few spare pistons are carried in stock, a Logan air valve can be reconditioned with only a few minutes of downtime. Write for Logan Catalog 100-4.

MEMBER—  
National Machine Tool Builders Assn.  
National Fluid Power Assn.

LOGAN MANUFACTURES 7,023 STANDARD CATALOGED ITEMS

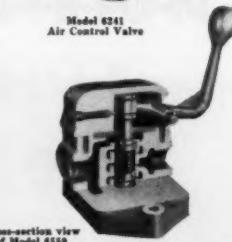
FREE CATALOG ON REQUEST

AIR CONTROL VALVES, Cat. 100-4 • AIR CHUCKS, Cat. 70-1 • AIR CYLINDERS, Cat. 100-1 • AIR-HYDRAULIC CYLINDERS, Cat. 100-3  
AIR and HYDRAULIC PRESSES, Cat. 51 • COLLET GRIP TUBE FITTINGS, Cat. 200-5 • HYDRAULIC CONTROL VALVES, Cat. 200-4  
HYDRAULIC CYLINDERS, Cols. 200-2; 200-3 • HYDRAULIC POWER UNITS, Cat. 200-1 • SURE-FLOW COOLANT PUMPS, Cat. 62

LOGANSPORT MACHINE CO., INC., 803 CENTER AVE., LOGANSPORT, IND.



82 models



Let Logan Engineers  
help you design your Air  
and Hydraulic Circuits.  
No obligation.



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built machine tools are now on display at the firm's showrooms and will soon be shown in other parts of the country.

#### Rudolph F. Onsrud elected fellow of ASME

Rudolph F. Onsrud, President of Onsrud Machine Works, Chicago, and Onsrud Cutter Mfg. Co., Libertyville, Ill., has been elected to the grade of Fellow of the American Society of Mechanical Engineers, one of the highest honors attainable in the engineering field. Onsrud, a well-known inventor and industrialist, holds numerous patents, having developed a number of high speed automatic and semi-automatic machine tools used in aircraft production, as well as other industrial equipment.



He joined the Onsrud Machine Works in 1920 and became president in 1940. In 1922-1923 he designed and manufactured the first nonmetallic ball spacer for high-speed precision ball bearings.

#### Plant purchased by Beloit Tool

The Beloit Tool Corp. has announced the acquisition of a plant in Beloit, Wis., which will be operated by their Regal division for the manufacture of high speed ground thread taps. The company was organized January 1, 1955, by Kenyon Y. Taylor, J. W. Oliver and H. R. Odell to manufacture and distribute nationally a complete line of compatible cutting tools.

Kenyon Y. Taylor recently resigned as executive vice-president and general



Kenyon Y. Taylor

## The ACE Policy

TO MAKE DRILL JIG BUSHINGS AS FINE AS HIGHEST QUALITY  
MATERIALS, EXPERT WORKMANSHIP AND PRECISION EQUIPMENT CAN BUILD THEM;  
TO MAINTAIN ADEQUATE STOCKS AT ALL TIMES;  
TO PROVIDE MAXIMUM SERVICE WITHOUT COSTLY DELAYS;  
TO CONDUCT OUR BUSINESS IN SUCH A MANNER  
AS TO INSPIRE CONFIDENCE AND MAKE, NOT JUST CUSTOMERS, BUT FRIENDS;  
AND TO JUSTLY WARRANT THE BUSINESS WITH WHICH WE ARE FAVORED.  
TO THIS END WE PLEDGE OURSELVES,  
OUR ORGANIZATION, FACILITIES AND PERSONNEL.

**ACE DRILL BUSHING CO., INC.**

5407 FOUNTAIN AVENUE • LOS ANGELES 29, CALIFORNIA

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MACHINE and TOOL BLUE BOOK

TAKE  
ONE  
LOOK...

and you'll  
see why this



# POPE PRECISION SPINDLE

means finer finishes at lower cost

Look at the super precision double row cylindrical roller bearings and separate thrust bearings, an exclusive feature found only in Pope Spindles.

You won't find bearings like these in other makes of spindles.

The bearings and shafts in Pope Spindles have tremendous load carrying capacity for crush dressing and form grinding. They produce superior, low micro-inch finishes, and

assure long, trouble-free operation. There can be no endwise movement of shafts in either direction. Operation is always cool. Pope System lubrication is good for the life of the bearings.

#### YOU CAN SPECIFY POPE SPINDLES WITH CONFIDENCE

Write for Catalog 60A covering the complete range from 1 HP to 15 HP in standard Pope Spindles.

106

Specify

**POPE**

PRECISION SPINDLES

POPE MACHINERY CORPORATION

Established 1920

261 RIVER STREET • HAVERHILL, MASSACHUSETTS

BUILDERS OF THE REVOLUTIONARY NEW POPE  
SUPER-PRECISION BORING MACHINE THAT BORES  
HOLES ROUND WITHIN MILLIONTHS OF AN INCH

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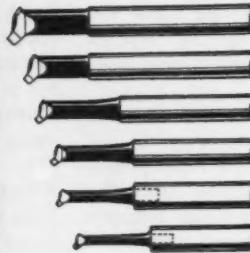
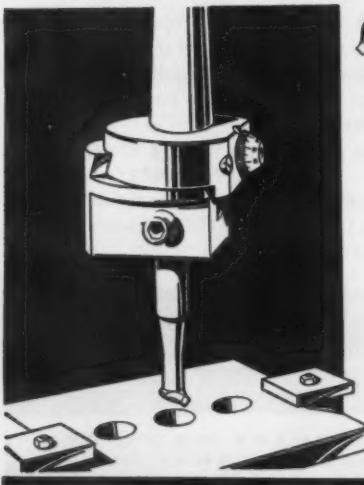
manager of the Besly-Welles Corp., of Chicago. J. W. Oliver was district manager of sales in the Detroit area for

Besly-Welles. H. R. Odell was formerly connected with the public accounting firm of Arthur Anderson & Co.



New plant of the Master Spline Tool & Gage Co. at Detroit. The company recently purchased the complete machinery and special equipment inventory of the Amco Gage Co. and has moved into the building formerly occupied by Amco. There are 20,000 sq. ft. of floor space on a plot of ground having an area of 65,000 sq. ft.

## CARBIDE BORING TOOLS



three  
Distinctive Styles

- for boring
- for facing & bottoming
- for internal threading

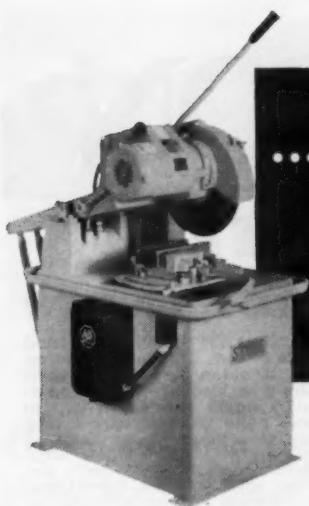
ALL WITH  
SOLID CARBIDE  
HEADS

Most standard sizes in four  
popular carbide grades are  
**IN STOCK FOR IMMEDIATE DELIVERY**  
**Write for free literature to**

**R. B. TOOL CO., INC.**  
784 North Broadway White Plains, N.Y.

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MACHINE and TOOL BLUE BOOK



...Cuts hardened tool steel  
Increased production over  
**5 TIMES\***

Model M75 "Heavy Duty" cut-off machine.  
Capacity: 2½" solids, 4" pipe and structurals.

A large Detroit tool shop formerly teamed a power hack saw with a band saw for cutting hardened tool steel.

These two machines were replaced by a single model M75 cut-off machine. \*Result . . . Model M75 increased production over 5 times.

Cost data proves tremendous economy of Stone machines compared to other methods.

- Cuts any metal — ferrous or non-ferrous — in 2 to 4 seconds per sq. inch.
- Used for cutting bar stock, pipe, tubing, structurals, etc.
- Leaves mill-like finish with tolerance less than  $\pm .005$ ; reduces the need for further machining.
- No change of characteristics or hardening of stock.

**Exclusive Features by Stone**

- Geared-in-head motor delivers maximum power to cutting edge for greatest efficiency.

- Self-centering vise presents least arc of contact for faster cutting, longer wheel life.
- Vise plate calibrated in degrees permits speedy changeover from straight cutting to angular cutting up to 46°.

**Optional Features**

- Semi-Automatic Power Stroke provides simpler operation, minimizes operator fatigue; gives up to 25% longer wheel life.
- Oil Mist Spray attachment for cooler, easier cutting increases saw blade life up to 400% on non-ferrous materials.

Machinery by Stone includes a complete line. Let us help you select the equipment which will enable you to realize greater profits on your particular operations. Our representative will gladly discuss your requirements with you. No cost or obligation; simply write or phone.

**Stone Machinery Company, Inc.**  
11 FAYETTE ST., MANLIUS, N. Y.

"Cut-off machinery by Stone . . . represented in every major industry throughout the world."

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## MORE POWER at the Spindle Nose

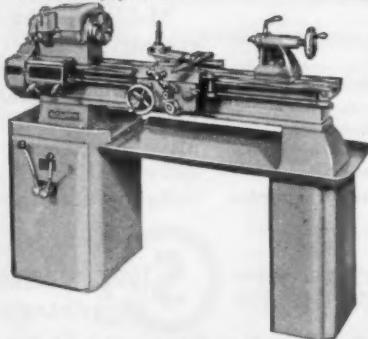
The greater work capacity of 10", 11" and 13" Sheldon Precision Lathes comes in part from their extra power. Compared to other lathes of similar swing and price, Sheldon Lathes are built to take larger motors. Sheldon Motor drives are better engineered and better built. In place of a single ordinary V-belt to drive the lathe spindle, these Lathes have twin, Neoprene, cog V-belts (each capable of delivering 40% more power than an ordinary V-belt).

The greater wrap-around of Sheldon's twin cog V-belts not only delivers more power at the spindle nose—permitting heavier cuts, they also eliminate slippage at the spindle—increasing accuracy of work.

Made of oil, heat and static resistant Neoprene, Sheldon's Spindle belts have a longer life expectancy than other belts of similar type.



**UM56P**—with 4-speed external lever shift type U, underneath Motor Drive in heavy cast iron Pedestal base with storage space in tailstock leg. \$1434.00 F.O.B. Chicago, less electrical equipment.



**EM56B**—with 4-speed Type E, Underneath Motor Drive in Cabinet base. \$1467.00 F.O.B. Chicago, less electrical equipment.



Write for New G-55 Catalog

**SHELDON MACHINE CO., INC.**  
4242 N. KNOX AVE. CHICAGO 41, ILLINOIS

Encircle No. 348 on Card, Opposite Page 65

MACHINE and TOOL BLUE BOOK



**new**

**in Metalworking**

## **Cincinnati Dial Type Milling Machines Have More Power, Require Less Effort**

A new line of dial type milling ma-

Cincinnati Milling Machine Co., Dept.  
HS, Cincinnati, Ohio. They are much



more powerful than the former design; push-buttons reduce operating effort; they have a wider range of speeds and feeds for machining operations on light metals as well as the newer and tougher alloys.

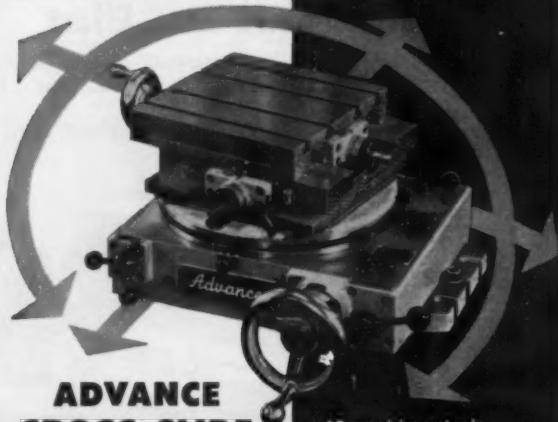
Machines are built in No. 2, 3 and 4 sizes and plain, universal and vertical styles for each size. Spindle speeds range from 18 to 1800 rpm for the No. 2 size, and 16 to 1600 rpm for the No. 3

and 4 sizes. Speeds are indicated by a large dial on the left-hand side of the column and selected by two push buttons. The starting lever has been eliminated, and push-buttons now start and stop the spindle drive. No. 50 standard spindle nose has been retained.

Three electrical control buttons are located on the right-hand side of the column, built into the electrical compartment cover. They start the motor,

## Cut Die-Making Cost

by reducing set-up time as much as **90%** With Jig Boring Accuracy

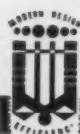


### ADVANCE CROSS-SLIDE ROTARY TABLE

\*Proved by actual  
on-the-job performance

permits fast, precise positioning of work-piece from ONE SET-UP. No unclamping and reclamping on your standard vertical mill equipped with ADVANCE Cross-Slide Rotary Table. Only your milling machine's table movement limits the size radius you can cut.

*Ideal for tools, dies, jigs, fixtures, gauges, patterns, molds, cams, templates, models and experimental work. Write for specifications and literature today.*



**MORRISON ENGINEERING COMPANY**

937 West Lake Street

Dept. H

Chicago 7, Illinois

Encircle No. 349 on Card, Opposite Page 65

MACHINE and TOOL BLUE BOOK

stop the motor, start and stop the coolant pump.

A new syncro-mesh principle is incorporated in the spindle drive. When the motor is running, the gear train constantly rotates at a very slow rate to facilitate shifting of gears and eliminate clashing noises. The spindle drive clutch and brake are hydraulically operated and require no adjustment.

Thirty-two feeds,  $\frac{3}{8}$ " to 90" per

minute, are selected with a knob, one at the front and one at the rear operating stations. Power rapid traverse is at the rate of 150" per minute. Feeds and rapid traverse are now powered by an independent 3 hp motor mounted on the knee.

The cutting fluid pump is now individually motor-driven. Plain and vertical machines are available with and without automatic table cycles. Auto-



## the POWER QUILL outperforms, outlasts the outmoded lathe grinder!

The Precise Power Quill is a small powerful high precision tool that outperforms and outlasts old fashioned lathe grinders, yet the Power Quill costs less! It can be mounted on any standard machine tool to mill, grind, or finish to tolerances of .0001". Operates at speeds up to 45,000 RPM, develops up to 1/2 H.P. and works on any material with abrasive wheels or tungsten carbide tools.

ATTACH THIS AD TO YOUR LETTERHEAD FOR A FREE DEMONSTRATION OR LITERATURE!

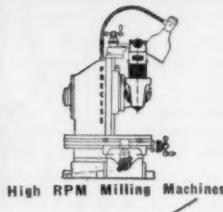
## PRECISE PRODUCTS CORPORATION

1331 Clark Street,

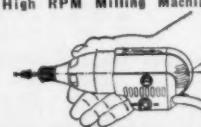
Racine, Wisconsin

Quality and Precision since 1882

Power Quills, Portable Electric Grinder Millers, High RPM Milling Machines, Milling Machine Accessories, Speed Lathes, Commutator Slotters, Grinding Tools, Rotary Tools, Carbide Tools.



High RPM Milling Machines



Super 30 Grinder Millers



matic cycle machines may be tooled up with one fixture for one-way single cycles, or fixtures at both ends of the table for two-way reciprocal milling, either continuous or with center safety

stop. The latter type of cycle is possible because of the automatic backlash device, a standard feature of all machines.

Use ACTION Card, opposite page 64. Encircle No. 1

## New 4" and 4½" Boring Mill

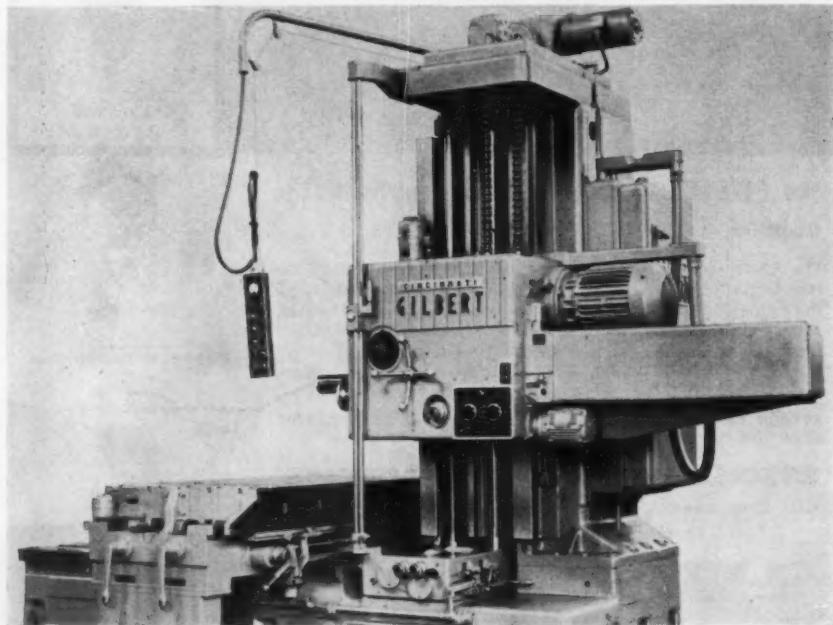
A high speed 4" and 4½" table-type horizontal boring, drilling, and milling machine, featuring pendant-control and pre-selector power shift of feeds and speeds, has been announced by the Cincinnati Gilbert Machine Tool Co., Dept. HS, Cincinnati, O.

During a cutting operation, feeds and speeds for the next operation can be selected. When the next cut is to be taken, the shift button is pressed to shift the gears to those feeds and speeds. When the shift button is pressed, the spindle stops, jogs while the gears are shifting, and then stops again.

The machine, with spindle speeds up to 1,500 rpm and built-in reversible motor without long shafts or bevel gears, is available with a wide range of column heights, table sizes, and bed lengths. Extended saddles with saddle supports can be furnished.

Optional features include vernier measuring devices, standard precision and measuring devices, or automatic positioning. The latter, located at the top of the column is completely independent of feed or speed mechanism and is claimed to position the head and table to extremely close tolerances.

Use ACTION Card, opposite page 64. Encircle No. 2



## Talking About Die Sets



WITH

PHIL MAMILIUS  
Vice-President  
The Products Machine Co.

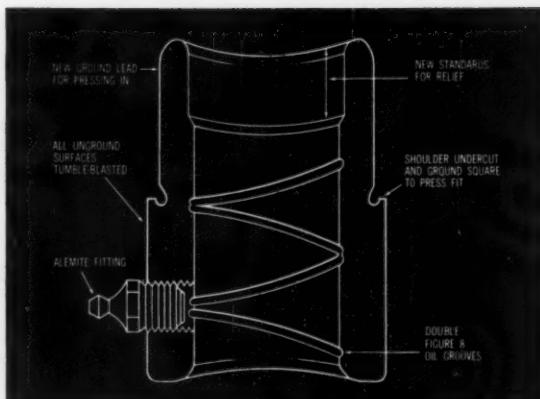
**Lubricate for Longer Life**—Faulty or insufficient lubrication of guide pins and bushings can result in a rapid reduction in the accuracy of die operation. Since the relationship between wear and friction is a direct ratio, proper lubrication greatly reduces wear and increases the useful life of pins and bushings. There are many fields of thought as to the type of lubricant best suited to die set operations at different speeds and varied accuracy requirements. The type used depends on the experience of the pressroom foreman. The method of application also varies widely to suit individual needs.

**Standard lubrication methods** involve a simple oil groove in the bushing. Here are a few inexpensive systems using the guide pin bushing as a source of lubrication: 1. Relief in the top of bushing is loaded with oil or grease; 2. Oil caps that feed oil into either a circular or Figure 8 groove in bushing through a hole in bushing wall; 3. An oil or grease fitting through which lubricant is forced manually as the need arises; 4. An oil reservoir cup that fits snugly over pin and from which oil is dipped onto bushing with each stroke of the press and is drawn up to completely coat bearing surface of pin for next downward stroke; 5. A steel oil-retaining ring containing a felt washer that fits over pin and slides up and down by spring-loading action or is attached to bushing.

**Guide pins** also have been made with oil grooves around the circumference or with splines or slots along the length, fed from inside through small connecting holes. Here, of course, bearing surface is somewhat reduced and pins tend to pick up dirt or chips.

**Another method** minimizes the amount of lubrication required. Bushings are made of bronze or other "soft" materials which hold lubricant in their surface while at the same time reducing friction normally encountered with like metal contact.

**Whatever method you choose**, proper lubrication will add life to your die sets and help maintain die accuracy.



Cutaway drawing of new Producto bushing

## NEW PRODUCTO BUSHINGS IMPROVE DIE SET ACCURACY, APPEARANCE AT NO EXTRA COST



Producto has engineered five important new design features into its master bushings\*—the heart of the die set—which provide greatly improved accuracy and appearance at no additional cost to users:

1. NEW STANDARDS FOR RELIEF give greater bearing surfaces, improve accuracy.
2. GROUND SHOULDERS seat bushings square to punch holder, guaranteeing perfect alignment.
3. NEW GROUND LEAD ON PRESS FIT starts bushing into punch holder easily.
4. DOUBLE FIGURE 8 OIL GROOVES fed by grease fitting provide a con-

stant source of lubrication to pin and bushing. (Optional spring-loaded grease cups are available.) 5. TUMBLE-BLASTING OF ALL UNGROUND SURFACES polishes surfaces in areas normally not finished after hardening.

These innovations are typical of the steps being taken to keep Producto's die set quality abreast of its service.

If you would like to receive *Die Set Digest*, our new, fact-filled quarterly, just drop us a note. And remember, for precision die sets fast, call your nearest Producto branch.

\*"Popular size" master die sets already have these new bushings. They will soon be available on all sizes.

THE PRODUCTO MACHINE COMPANY  
960 Housatonic Avenue, Bridgeport 1, Connecticut  
Telephone FOrest 7-8675

For prompt die set service, phone these PRODUCTO assembly warehouses:

Atlanta	CT 7767	Detroit	LT 6-7500	Philadelphia	MO 4-1010
Chicago	ES 8-3307	Kansas City	BA 9033	Rochester	GL 1810
Cleveland	SU 1-6158	Los Angeles	TR 9826	St. Louis	FR 3370
Dayton	MU 1651	New York	WO 4-7484	or check the Yellow Pages in	

any stamping center in the United States or Canada for distributors stocking PRODUCTO.

**Produce More With**

# PRODUCTO

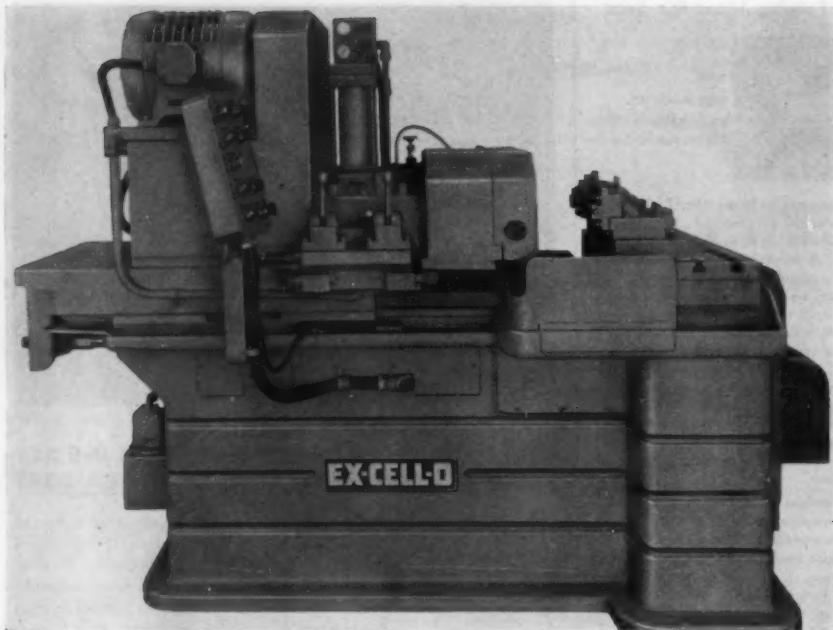
Precision Die Sets



Encircle No. 351 on Card, Opposite Page 65

November, 1955

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## Cam Operated Boring Machines

The Ex-Cell-O Style 312 cam operated precision boring machine generates accurate contours on a high production basis. The machine is controlled by a pair of cams which are mounted on a single heavy shaft for maintaining positive coordination. One cam controls the cross slide while the other controls the table slide. The cams are opposed by air cylinders and engage the fol-

lowers at the center of the slides. The action is direct. No levers are used. Both the table slide and the cross slide have their own ways which are widely spaced, hardened and ground, and are lubricated automatically. Ex-Cell-O Corporation, Dept. JS, 1200 Oakman Blvd., Detroit, Mich.

Use ACTION Card, opposite page 64. Encircle No. 3

### New 16" drilling machine rated at $\frac{1}{2}$ " capacity

The Cincinnati 16" Royal Model LE drilling machine is available in single spindle bench and floor models and single and multiple spindle production bench models.

Rated at  $\frac{1}{2}$ " capacity in cast iron with an 1800 rpm motor, drill is equipped with a 0" to  $\frac{1}{2}$ " capacity chuck

mounted on a taper plug spindle. A No. 2 Morse taper spindle, less chuck, is optional if specified.

Electrical controls including overload protection, motor mount, vee belt, pulleys for spindle and motor, and contour-fitting belt guard are standard equipment. Five spindle speeds are provided, ranging from 410 to 4840 with an 1800 rpm motor, or 342 to 4033 with a 1500 rpm motor. A direct-reading

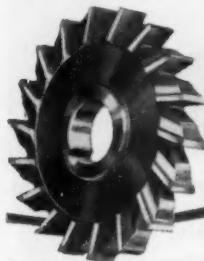
# actual PERFORMANCE has the EDGE here!

Convex Cutter —  
Available in both  
standards.

Concave Cutter —  
Available in both  
standards.

Side Milling Cutter—  
Featuring our step  
tooth design.

Single Angle Cutter.



2-Flute  
Double End Mill.



F & D Tools maintain the exacting standards of quality necessary to guarantee the most consistent cutting tools ever made. Our "Step Tooth" design assures you the most versatile tool available today. Write today for the address of your local distributor and our latest catalog.

FOR DISTRIBUTOR AREAS STILL OPEN PLEASE CONTACT

**F & D**

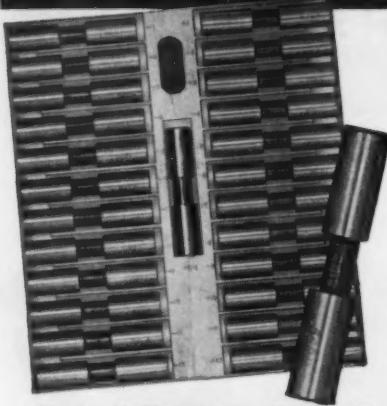
**TOOL CO., INC.**  
THREE RIVERS, MASSACHUSETTS

Encircle No. 352 on Card, Opposite Page 65

November, 1955

225

## CLOSER PRODUCTION TOLERANCES!



### DELTRONIC Tenth Plug Gauges

*save time and material, too!*

This new system of precision gauging in sets of 25 provides one gauge of nominal size plus 12 gauges of increasingly larger sizes in .0001" increments and 12 gauges of decreasingly smaller sizes in increments of .0001".

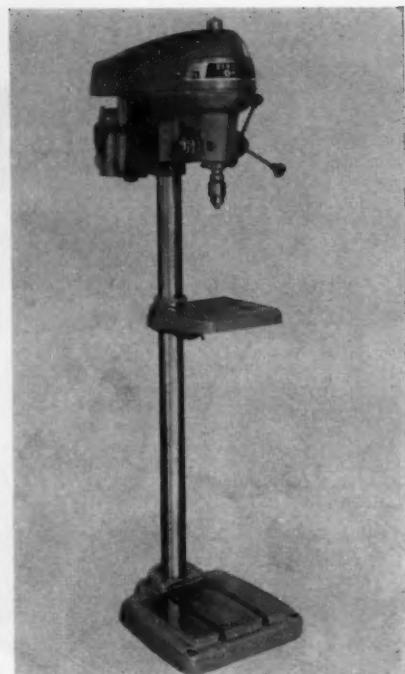
- ★ Size variation by ten thousandths
- ★ Available in increments of 1/64" from 1/8" to 1"
- ★ Set of 25 costs approximately same as Go and No Go gauge
- ★ Hardness is Rockwell C62/C64

For further information write Dept. D.

**DELTRONIC  
CORPORATION**  
1507 RIVERSIDE DRIVE  
LOS ANGELES 31, CALIF.

Encircle No. 353 on Card, Opposite Page 65

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depth dial incorporates a positive stop. Cincinnati Lathe and Tool Co., Dept. BB, Cincinnati 9, Ohio.

Use ACTION Card, opposite page 64. Encircle No. 4

### Instrument automatically controls carbon potential of furnace atmosphere

An automatic controlling, recording, and proportioning instrument which enables the heat treater to set his atmosphere generator or furnace in equilibrium with any steel to be heat treated is now offered by Lindberg Engineering Co., Dept. RB, Chicago 12, Ill.

Named the "Carbotrol," it is claimed to make automatic control of the furnace atmosphere for any type of steel as simple as automatic temperature control of the furnace. The heat treater merely sets the pointer on the control

MACHINE and TOOL BLUE BOOK

*to economize*  
**STANDARDIZE**  
*with*

# RING



## precision PUNCHES and DIES



Ring Standardized Punches and Dies offer cost saving dependable performance for all of your perforating problems.

Precision volume production to rigid specifications offers

- ★ Low cost
- ★ Complete interchangeability
- ★ Immediate shipments from stock on Standards plus prompt delivery on Specials
- ★ High quality — long life

### MANY SHAPES AND TYPES



ROUND



SQUARE



OBLONG



HEXAGON



RECTANGULAR

Blanks — Pilots — Headless — Shoulder and Bevel Head Quills — Slug Ejector Punches — Transfer Punches

**NEW!**

Tough — Accurate Retainers for Ring Punches and Dies mount easily to your die set. Available in Key Type for irregular shapes.

WRITE FOR OUR ILLUSTRATED CATALOG



## RING PUNCH & DIE COMPANY

21 Fenton Place

Jamestown, N.Y.

November, 1955

Encircle No. 354 on Card, Opposite Page 65

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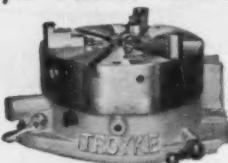
# TROYKE

## ROTO-INDEXER

Takes the place of expensive jigs and fixtures in connection with milling, drilling, jig boring, grinding and slotting.

### INDEXING

Rapid - Positive - Accurate



### CHUCK OR T-SLOTTED INDEXING TABLES - FOUR MODELS

Hand operated. Unique patented block out arrangement. Can be used in vertical or horizontal position.

### ROTARY TABLES



### STANDARD MODELS WORM WHEEL OPERATED ROTARY TABLES

Five sizes: 9", 12", 15", 21" For die sinking, jig boring, cam milling. Indispensable in wood and metal pattern shops.



### HEAVY DUTY MODELS WORM WHEEL OPERATED ROTARY TABLES

Three sizes: 18", 21", 25" These larger, heavy duty models are used for jig work, planer jobs, and on horizontal boring mills. DIVIDING ATTACHMENTS or DRILLING ATTACHMENTS can be furnished.

See Your Dealer or Write for Catalogs



TROYKE MFG. CO.

CINCINNATI 9, OHIO

Encircle No. 355 on Card, Opposite Page 65

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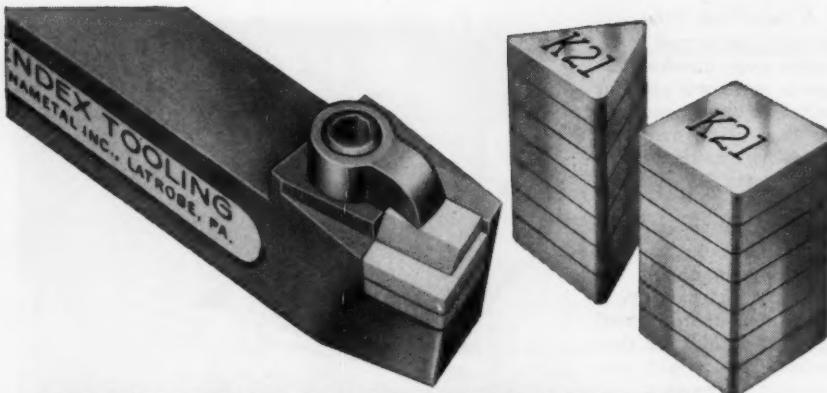
instrument for the carbon content of the steel he wishes to treat and the Carbotrol will automatically control the atmosphere generator to produce a protective atmosphere in equilibrium with the steel.

The air-gas ratio of the endothermic generator is automatically corrected to produce a constant dew point, or carbon potential, as the raw gas supply and pressure varies.

The instrument, used in conjunction with Lindberg Hyen atmosphere as a carrier gas, automatically controls carburizing and carbonitriding processes to produce the carbon in the case to any desired specification. Soot is also eliminated during the cycle.

Use ACTION Card, opposite page 64. Encircle No. 5

MACHINE and TOOL BLUE BOOK



## THESE TWO RECENT KENNAMETAL\* DEVELOPMENTS HELP TO MEET TODAY'S HIGH-SPEED PRODUCTION NEEDS

The profit advantages of today's high-speed automatic cycling machines for metal cutting are lost when tools wear rapidly—need frequent regrinding—or are cumbersome to index.

Kennametal recently introduced two new developments to help give you continuous machine performance, and to help step up profits in your steel-cutting operations. These developments are Kindex\*† Button Tooling and Kennametal Grade K21.

Kindex "turnover" inserts, with replaceable Kennametal shims and new chip control system, double the number of cutting edges, eliminate all regrinding and index in seconds. These features help provide consistent tool performance and hold downtime to a minimum.

Grade K21 is the General Purpose steel-cutting carbide now outperforming all other medium grades in the carbide industry. Superior performance of K21 is due to exceptionally high edge strength, strong resistance to cratering and superior wear qualities. An extremely versatile grade, K21 can be applied to general steel-cutting, heavy roughing and finishing.

Kindex, in 17 styles and sizes; and K21, in popular blanks and inserts, are immediately available from stock. For their right application on your machining jobs, call a Kennametal Tool Engineer. He works exclusively with Kennametal . . . applying and servicing it. And be sure to ask for reports of Kindex and K21 repeat performances, job after job. **KENNAMETAL INC., Latrobe, Pa.**

\*Registered Trademark

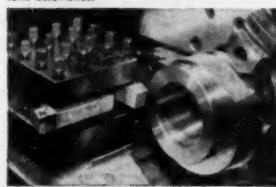
†Patent applied for

9403

### PROVED BEST—TEST AFTER TEST



Kindex Tooling with "turnover" inserts cuts tool cost from \$1.20 to \$0.09 per piece, turning SAE 4140 sink assemblies.



Grade K21—on interrupted cutting, roughed and finished 6 times as many pieces as other premium carbide.

Give your machines the tools they deserve . . . the **BEST**



MINING, METAL AND WOODWORKING TOOLS  
WEAR AND HEAT-RESISTANT PARTS



INDUSTRY AND  
**KENNAMETAL**  
...Partners in Progress



Encircle No. 356 on Card, Opposite Page 65

November, 1955

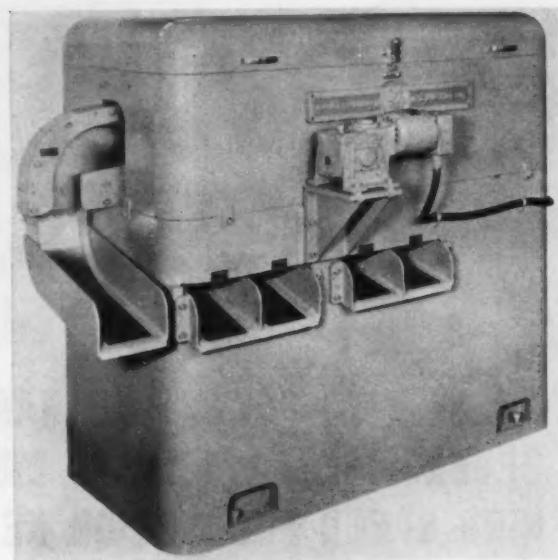
229

## Automatic Gear Checker Sorts Shaper-Cut Gears

A new Red Ring automatic motorized precision gear checker inspects and sorts spur or helical gears produced by conventional gear shaping methods for three variables in tooth dimensions.

Gears are inspected by electronic indicators and master gear means for incomplete stroke, oversized and undersized teeth, and thick or thin teeth. Chutes sort out sub-standard gears.

Gears are loaded by hand and fed through the various inspection stages in the checker automatically. Automatic interlocks prevent the feeding of a gear through the checker un-



## Cerromatrix Does It!

**Slide Rods Anchored at  $\frac{1}{2}$**   
**Cost of Machining for**  
**Drive Fits.**

### Here's How:

Grooved slide rods were inserted in cored, oversize holes and aligned in a holding fixture. Cerromatrix was melted and poured in place. When frozen, Cerromatrix expanded to give a tight fit that exceeded the life of the machine. Proven by 20 years in service.

Find out how YOU can save money in anchoring bearings, bushings and non-moving parts in machine building by writing for Bulletin A1.



## CERRO DE PASCO CORPORATION



294 Park Avenue, New York 5, N. Y.

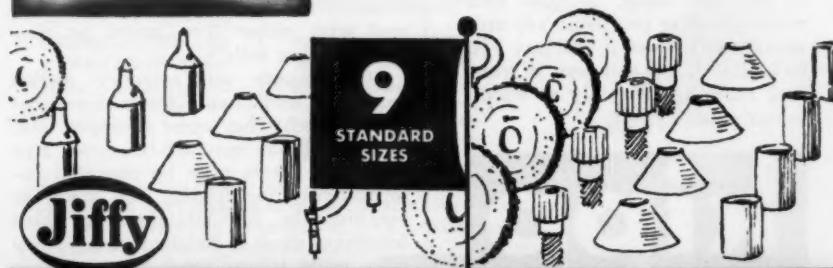
# REDUCE PACKAGING COSTS

USE  
**JIFFY**  
**PADDED**  
**SHIPPING BAGS**  
FOR

SEMI-FRAGILE AND NON-FRAGILE ITEMS

- Jiffy Bags Save Packing Time—  
as much as 76%!
- Jiffy Bags Cut Labor Costs—Insert item into  
bag—staple or tape. Ready for shipment!
- Jiffy Bags Prevent Damage to Shipments.  
Reduce claims —create good-will.
- Jiffy Bags Replace Boxes, Wrapping  
Paper and Dunnage.
- Jiffy Bags are Inexpensive.

Distributors in Principal Cities  
Samples and Prices Gladly Furnished



**JIFFY MANUFACTURING COMPANY**

374 FLORENCE AVENUE

HILLSIDE, N. J.

November, 1955

Encircle No. 358 on Card, Opposite Page 65

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**HIGHER SPEEDS!  
FASTER GRINDING!**

**kipp**

## **AIR GRINDERS**

**MODEL JA  
50,000 R.P.M.**

**\$42.00  
IN U.S.A.**



Weight 12 ounces,  
length 6½ inches,  
chuck size ½ inch.  
Wheel guard removed  
for better illustration.

The RPM's stay up while  
grinding . . . not only when the  
grinder runs idle. That means  
better work—longer wheel life.

High speed grinding with small  
wheels was a Madison-Kipp de-  
velopment of the late twenties.  
It was born out of a pressing need  
in our tool room. Because tool  
room grinding problems are uni-  
versal, we believe it will pay you  
to utilize Kipp grinders in your  
tool room as generally as we do  
in our own.

**kipp**

**MADISON-KIPP CORP.**

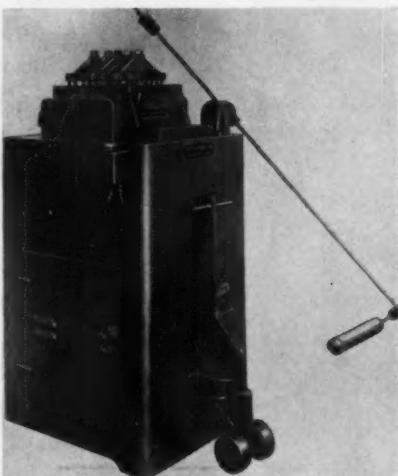
207 Waubesa St., Madison 10, Wis., U.S.A.  
Encircle No. 359 on Card, Opposite Page 65

til the previous gear has cleared the  
unit. Indicator lights on the machine  
tell the operator the reason for the re-  
jection of any individual part. National  
Broach & Machine Co., Dept. JS, 5600  
St. Jean Ave., Detroit 13, Mich.

Use ACTION Card, opposite page 64. Encircle No. 8

### **Portable motorized stock straighteners**

A new development for plant press  
rooms, these motorized stock straight-  
eners are available with one unit drives  
having either constant or variable  
speeds. There is a variety of sizes, for  
stock in width from 2½" up to 12"



and with either five, seven or nine  
straightening rolls.

Straighteners are mercury switch  
controlled and have a forward and re-  
verse switch. They come equipped with  
an adjustable counter-balanced free  
loop arm. Units may be operated in-  
termittently for feeding coil stock or  
continuously for straightening short  
lengths of stock or finished parts. Heavy  
duty units taking stock up to 24" in  
width are also available. Cooper Wey-  
mouth, Inc., Dept. MG, 277 Noble Ave.,  
Bridgeport 8, Conn.

Use ACTION Card, opposite page 64. Encircle No. 7



#### NORMA-HOFFMANN BALL BEARINGS

Rugged—thoroughly dependable for carrying thrust and radial loads.

#### NORMA-HOFFMANN ROLLER BEARINGS

Short, cylindrical roller design... heavy-duty bronze retainer... lowest possible coefficient of friction under heavy load.

Norma-Hoffmann heavy-duty Bearings improve the design and performance of products wherever they are used. They are dependable, give friction-free smoothness and quietness of operation. Available in a wide range of sizes for every load, speed and duty. Write for catalog and engineering assistance.

**NORMA-HOFFMANN**  
Precision **BEARINGS**  
BALL • ROLLER • THRUST

November, 1955

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*Any way you figure it*  
**NORMA-HOFFMANN**  
PRECISION  
BEARINGS  
*are the Right  
Answer*



# .0005 HOLE LOCATION IN 3 MINUTES

YOU NEED THIS TOOL EVERY TIME YOU USE A DRILL CHUCK or BORING HEAD in a VERTICAL MILL, HORIZONTAL MILL or JIG BORER, if the hole is located from a surface that has been machined.

**\$10.00**

With Case



A well known aircraft manufacturer has more than 100 of these edge finders.

This edge finder rotates in the machine spindle from 300 to 1200 R.P.M. and it is held in a  $\frac{3}{8}$ " collet or end mill holder.

- NO DOUBT WHEN LOCATION IS REACHED—The lower half jumps sideways  $1\frac{1}{2}$ " and continues to rotate there when location is reached. This occurs at the same dial graduation every time.
- NO EYESTRAIN—Location can be seen easily with average light. A source of light is not needed behind this edge finder.
- SHORT DISTANCE REQUIRED FROM WORK TO MACHINE SPINDLE—This edge finder permits the use of short tools without readjusting the machine because its length is only  $2\frac{1}{2}$ ".
- LOCATES FROM FLAT OR ROUND SURFACE.
- LOCATES FROM STEP ONLY .010" HIGH.
- IDEAL TOOL for LOCATING HOLES in DRILL JIGS, DIES, TOOLS and MACHINE PARTS.
- LOCATION IN 3 MINUTES will make possible the machining of a hole, in the same location in any number of pieces. This can be accomplished by using a stop on the machine vise.
- MADE FROM HARDENED TOOL STEEL WITH ALL SURFACES GROUND.

STOCKED BY DEALERS IN MOST PRINCIPAL CITIES

**GLOVER MFG. CO.**

511 TERRACE STREET  
MEADVILLE, PA.

Encircle No. 361 on Card, Opposite Page 65

## MARKING MACHINES



General Purpose Hydraulic-Pneumatic Machines will mark round, flat and many contoured surfaces. Use either flat or roller dies. The 3 way No. 240 can be used as 12,000 lb. stamping press as well as single pass and reciprocator. Available in many models including manual operated.

High Production Rotary Machines easily mark at "thousands-per-hour" rates. Marks rounds that are solid or tubular and may be equipped with ejection features.



**JAS. H. MATTHEWS & CO.**

3946 Forbes Street • Pittsburgh 13, Pa.

CLIFTON, N. J.

BOSTON

PHILADELPHIA

CHICAGO

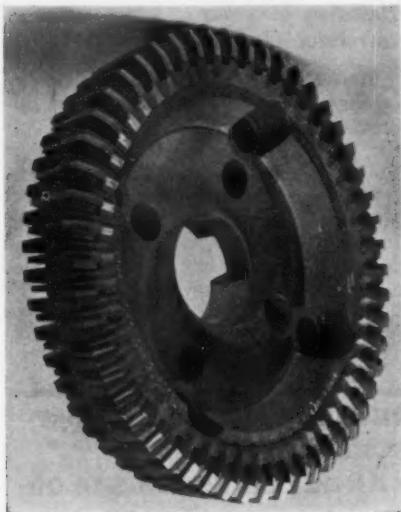
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MACHINE and TOOL BLUE BOOK

## High feed roughing cutter increases tool life

An extra-close-bladed, high feed rate Shear Clear face mill, developed by the Ingersoll Milling Machine Co., Dept. RB, Rockford, Ill., is reportedly providing increases of from 75% to 100% in tool life on production jobs.

The roughing cutter has five carbide-tipped blades for every inch of diameter. Manufactured in diameters from 4" up, it is expected to have wide applications in industries where cast iron is milled



at exceptionally high feeds.

High feed rates and longer tool life are claimed to result from a new principle of placing blades close together, plus a free cutting, shearing action. Use ACTION Card, opposite page 64. Encircle No. 8

## Precision jig borer has increased capacity

While retaining the sensitivity and ease of control of the Hauser 2BA, the manufacturer has incorporated new features in the 3BA to increase its range and usefulness: greater boring capacity,

## For PRODUCTION TAPPING AT ITS BEST

### Use DoALL "Engineered" Taps

- Complete stocks
- All kinds . . . all sizes
- High speed steel
- Special taps for special needs

### Call DoALL

see classified directory for nearest DoALL Service-Store carrying complete stocks cutting tools, gages, supplies.

The DoALL Co.

Des Plaines, Ill.

Guaranteed

None  
Finer

Encircle No. 363 on Card, Opposite Page 65

## PORTRAIT ELEVATING TABLE



Saves  
TIME  
and  
LABOR

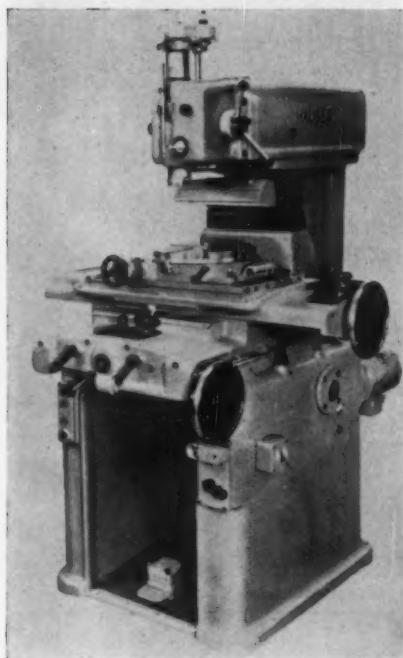
Eliminate heavy lifting and cut handling costs. Slight foot pressure varies height from 31<sup>1</sup>/<sub>2</sub> to 46<sup>1</sup>/<sub>2</sub>, leaving operator's hands free. Table swivels and locks in any position.

Our major services — Designing and Building — Dies, jigs, fixtures and special machinery.

SEND TODAY FOR ILLUSTRATED CATALOG No. 2

THE MIDWEST TOOL & ENG. CO.  
112 WEBSTER ST., DAYTON, OHIO

Encircle No. 364 on Card, Opposite Page 65



greater height adjustment, heavier quill, larger table surface and greater table travel.

Working surface of the table is 21 $\frac{3}{4}$ " x 12 $\frac{1}{4}$ "; longitudinal table travel, 15 $\frac{3}{4}$ "; travel of transverse slide, 10"; maximum distance boring spindle to table, 23 $\frac{1}{2}$ "; adjustment of vertical slide, 15"; vertical travel of boring spindle, 5 $\frac{1}{4}$ ". U. S. agent is Carl Hirschmann Co., Inc., 30 Park Ave., Manhasset, N.Y.

Use ACTION Card, opposite page 84. Encircle No. 9

#### Elevating conveyor correlates two machines

The Feedall Series 4500 elevating conveyor transfers parts from one operating machine to another. It accepts the parts from the discharge chute of the first machine, elevates and synchronizes them for delivery to the next machine. Since both machines are set to operate at the same fixed rate of speed the conveyor operates at that same rate of delivery.

It will handle cylindrical parts up to 3 $\frac{1}{2}$ " in diameter and 1 $\frac{1}{2}$ " thick. Power

#### Get a better "SURFACE GRINDER" job at less cost

QUICKEST AND EASIEST SETTING TOOLS MADE  
**RADIUS DRESSER \$39.00      ANGLE DRESSER \$44.00**

DIAMOND \$7.00

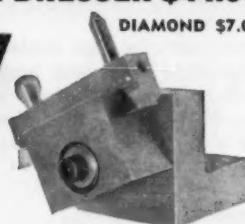


Chatter Resistant, Spring Loaded Spindle  
Hardened shaft—bearing adjustable for wear.  
Diamond always perfectly centered.  
Easily set adjustable 180° stops.

16" Wheel size for DeALL and NORTON  
Grinders—\$44.00. Diamond \$7.00.  
SPECIAL 20" Wheel Size \$110.00.

ORDER DIRECT  
on our 10 day  
money back  
guarantee

DIAMOND \$7.00



Ball Thrust Bearing. 24  
Precision Ground Surfaces. Can be set  
very accurately with a Protractor or  
Sine Bar. Works underneath the wheel.  
Large bearing surfaces.

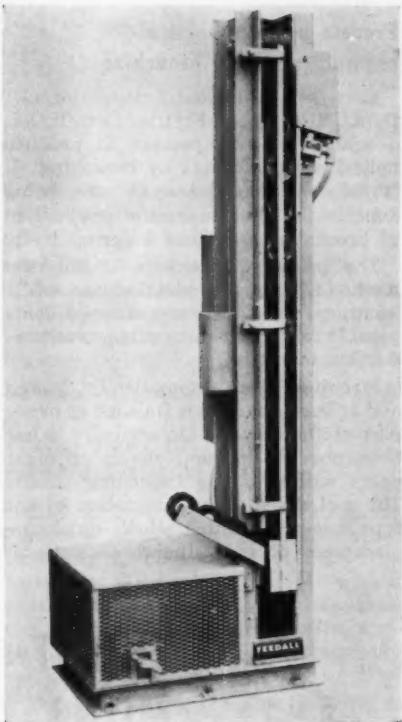
#### The "Mighty Midget" Line

SPERMAN METAL SPECIALTIES • 2197 E. 21st ST. • BROOKLYN 29, N. Y.

DUE TO CIRCUMSTANCES BEYOND OUR CONTROL WE MUST RAISE PRICES JAN. 1st.

Encircle No. 365 on Card, Opposite Page 65

MACHINE and TOOL BLUE BOOK



is furnished by a  $\frac{1}{4}$  hp 220/440 volt motor through a variable speed drive. Feedall, Inc., Dept. RH, Willoughby, Ohio.

Use ACTION Card, opposite page 64. Encircle No. 10

### Deburring and chamfering tool

A newly engineered Nobursink for deburring and chamfering of openly accessible hole faces has recently been announced by the Nobur Mfg. Co., Dept. KE, 6860 Farmdale Ave., North Hollywood, Calif. Higher rake angle produces a greater shear or shaving action.

The shaving action is accomplished with a minimum of pressure, consequently a secondary burr is not developed. The circular, radial relief form of clearance at the cutting edge serves

### You Can Cut Cost Per Hole with DoALL Reamers because:

1. Special process-  
ing gives  
more holes  
per grind.

2. Faster feeds  
can be used.

3. DoALL stocks  
more sizes  
and types  
than anyone  
else.



Call DoALL—consult  
classified directory for  
nearest DoALL Service-  
Store that stocks cutting  
tools, gages, supplies —  
or Write

**The DoALL Co.**

Des Plaines, Ill.

18



Carbide

Encircle No. 366 on Card, Opposite Page 65

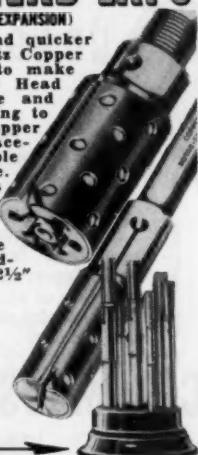
### Boyar-Schultz COPPER HEAD LAPS

(STANDARD and EXPANSION)

It is less costly and quicker to use Boyar-Schultz Copper Head Laps, than to make your own. Copper Head Laps are accurate and rapid to use. Nothing to wear out but the copper sleeve which is replaceable and adjustable to the correct size. Adjustment permits maintaining lapping size till worn out and replaced with new ones. Available from stock in standard sizes,  $\frac{1}{8}$ " to  $2\frac{1}{2}$ " diameters.

#### SPECIAL TOOL MAKERS BENCH LAP SET

Consists of seven  
most commonly used  
sizes —  $\frac{1}{8}$ " -  $3/16$ "  
 $\frac{1}{4}$ " -  $5/16$ " -  $\frac{3}{8}$ "  
 $7/16$ " -  $\frac{1}{2}$ ", with  
enamelled die cast  
base.



**BOYAR-SCHULTZ CORPORATION**  
2008 S. 25th Ave., Dept. F-B, Broadview, Ill.

Encircle No. 367 on Card, Opposite Page 65

237



to support the cutting edge against wear and chippage. Two-piece construction permits cone faces to be cylindrically ground on tool and cutter grinders or on any lathe with a tool post grinder. Half members are then locked in a displaced position to provide automatic radial relief.

A black-oxide finish reduces friction and any tendency toward galling in applications where lubricants are not used.

Use ACTION Card, opposite page 64. Encircle No. 11

### Process produces helical external gears by broaching

General Broach and Engineering Co., Dept. MBB, 14333 Prairie, Detroit, has developed a new process to produce helical external gears by broaching. It is believed that the work now being done is the first successful application of broaching to helical external teeth.

The primary advantage of the new method is the low production cost, while accuracy and finish are claimed comparable to that given by other gear production methods.

Machines are automatically loaded and at least one part is finished at every pass of the broach. Occasionally it has been possible to complete up to eight gears with a single broaching stroke. The tool design is an adaptation of pot type broaching which allows quick replacement of individual broach teeth.

do you have a  
**TOOL PROBLEM**

Columbus Die-Tool has been solving tooling problems for over 45 years. Expert designers and builders of all types of tools and special machinery. Write us today!

**COLUMBUS DIE-TOOL**  
and Machine Co.

P. O. BOX 750 • COLUMBUS, OHIO

Encircle No. 368 on Card, Opposite Page 65

238

**WHOOT  
MON!**



You really get  
your money's  
worth when  
you buy preci-  
sion screw ma-  
chine products  
made by "you  
know W.H.O.\*"

CAP SCREWS • COUPLING BOLTS  
SET SCREWS • MILLED STUDS  
... our specialty.

\*W.H. Oetmiller Co.  
YORK, PENNA.

Encircle No. 369 on Card, Opposite Page 65

MACHINE and TOOL BLUE BOOK



As the blanks pass through the center of the broach they are guided only by the broach and teeth and need not be center piloted.

The process does not lend itself well to short run production (less than 50,000 gears) because of the initial tooling cost.

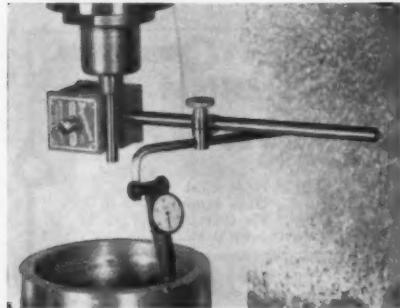
Use ACTION Card, opposite page 64. Encircle No. 12

### Testing stand has permanent magnet base

The Magnicator testing stand is equipped with a permanent magnet base having magnetic force fully releasing and turned on and off with a push button control. It can be used on any magnetically conductive surface, in any position—upright, horizontal, or upside down.

The design accommodates Brown & Sharpe dial attachment No. 725 in a range of .030" by .001" and No. 725A with a range of .008" by .0001". It can be used with other indicators as well. Brown & Sharpe Mfg. Co., Dept. B, Providence 1, R.I.

Use ACTION Card, opposite page 64. Encircle No. 13



November, 1955

### CHECK YOUR "MIKES"

this fast, accurate way

New DoALL Set  
checks readings  
and spindle  
surfaces

- Three Gage Blocks
- Two Optical Flats
- Accessories
- Millions of Accuracy



see classified phone  
directory for nearest  
DoALL Service-Store—  
complete stock of gages,  
cutting tools, supplies.

Or Write  
The DoALL Co.

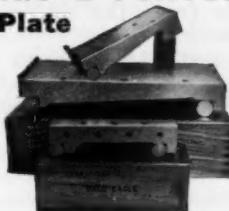
24

Encircle No. 370 on Card, Opposite Page 65

### ACCURATE—LOW COST SINE BARS & PLATES

10" Sine Plate  
only  
**\$87.50**

- Guaranteed Accuracy
- Precision Ground
- Hardened Rolls
- Double Normalized
- Tapped Holes
- End Plates
- Solid Oak Case Extra
- Immediate Shipment



Sine Plates & Bars

No.	Cent. Dist.	Width	Price	With Oak Case
1605	5"	3"	37.50	43.00
1610	10"	5"	87.50	95.00
1705	5"	1"	21.75	25.25

F O B St. Paul:

Accurate to .0002" in center  
distance and parallelism for  
the length of the tool. Order  
Today—from your dealer or  
direct.



**Bald Eagle Tool Co.**  
357 Minnesota St., St. Paul 1, Minn.

Encircle No. 371 on Card, Opposite Page 65

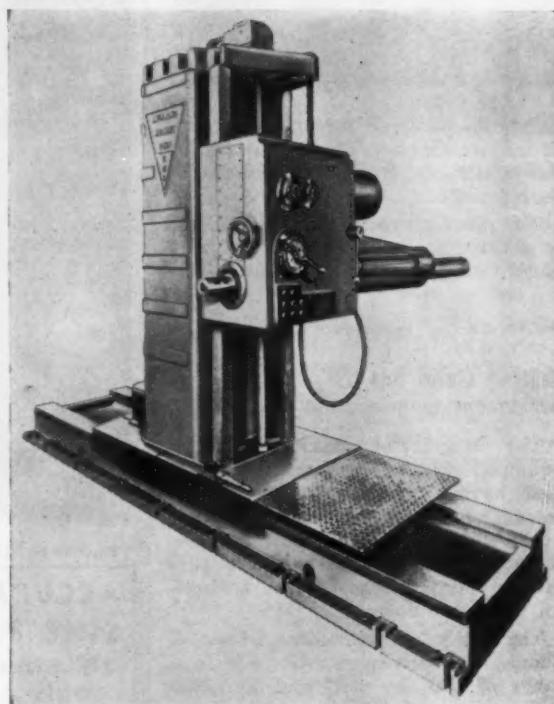
239

## Horizontal Drilling and Boring Machine

Designed specifically for large drilling, reaming, boring, tapping and spot facing operations with modern cutting tools, this new and larger size Kaukauna Model 3045 has a 5" diameter nitr alloy spindle providing 42" of continuous spindle travel under power feed, and a positive drive employing motors up to 25 hp.

Accuracy is secured by mounting the spindle in a hardened forged sleeve set in precision Timken taper roller bearings. The sleeve is driven by horizontally mounted change gears in the headstock and all speed and feed gearing is shaved and hardened for smooth transmission of the full power available from the drive motor.

Speed and feed changes are made automatically and are selected by rotating a dial. Positioning of the headstock on the column and the column on the runway is con-



trolled electrically. A two-speed traverse mechanism, controlled from a single push button, gives rapid traverse

**CLOSED** **TRADE** **CLOSED** **MARK** **OPEN**

**Plain Type** **AUTOM** **Offset Type** **OPEN**

**CONTINUOUS HINGES**

All hinges shown can be furnished with special holes, cutouts and bends to blue-print in metals to suit the job.

**THREE-FOURTHS OFFSET**

**AUTO MOULDING & MFG. CO.**  
**1110 E. 87TH ST.**  
**CHICAGO 19, ILL.**

**SPECIFICATIONS**  
Open width  $\frac{7}{8}$ " to 6"  
Gage Material .040 to .125  
Pin Diameter .101 to  $\frac{3}{8}$ "  
Lengths to 120"

**SEMI-OFFSET**

Encircle No. 372 on Card, Opposite Page 65

MACHINE and TOOL BLUE BOOK

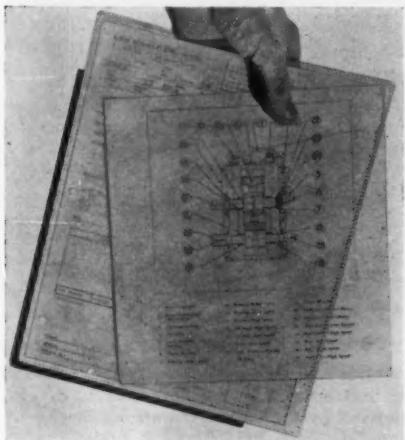
at 100" per minute and positioning traverse at 4" per minute. Individual motors for vertical and horizontal movement enable the operator to locate his tool simultaneously in two directions.

The basic machine has 48" of vertical travel and 48" horizontal travel, but both vertical and horizontal travel can be increased to meet individual requirements. Kaukauna Machine Corp., Dept. RB, Kaukauna, Wis.

Use ACTION Card, opposite page 64. Encircle No. 14

### Blueprint and work records envelope

Pacific-Vinyl envelopes, made of vinyl plastic, are made in all sizes suitable for protecting blueprints, shop



**DoALL**  
**SAW BANDS**

MADE SHARP! TO STAY SHARP!

- Super-sharp, super-hard tooth.
- Engineered gullet for smooth chip flow.
- Teeth securely "anchored" to flexible back.

You get more mileage out of DoALL Saw Bands on any make of bandsawing machine. Prove it to yourself. Try one against any other blade.

**Call DoAll**

—let your DoALL Sawing Specialist select the blade that's best for your job. Saw Bands...Cutting Tools...Gages...Tool Steel—in Stock.

51

Encircle No. 373 on Card, Opposite Page 65

cards, work charts, inspection charts, etc. The contents can be easily read through the vinyl cover.

By using an electronic sealing process, all edge stitching is eliminated, increasing the life of the envelope. Vinyl is said to be no-brittle and resistant to tears, scratches, and wrinkles. Pacific Plastic Products, 6402 Crenshaw Blvd., Los Angeles 43, Calif.

Use ACTION Card, opposite page 64. Encircle No. 15

**THE RIGHT TOOL FOR THE JOB  
IS HALF THE JOB** — An Old Axiom Still True

**THE RIGHT TOOL  
FOR A SMALL END  
MILL JOB IS A- } MICRO MINIATURE  
END MILL**

When you think of small  
END MILLS — think of  
MICRO MINIATURES

DISTRIBUTORS IN PRINCIPAL CITIES

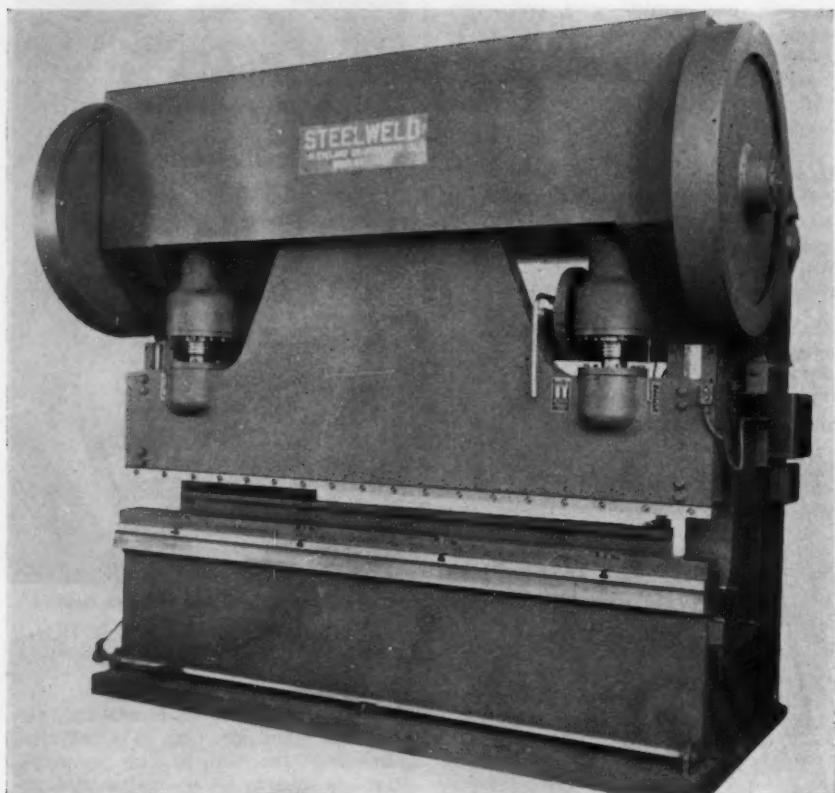
WOODSON TOOL CO. 4811 Lennox Blvd. Inglewood, Calif.

Write for Catalog

Encircle No. 374 on Card, Opposite Page 65

November, 1955

241



This bending press handles steel plate to 10"x 1/2". It can be used for various operations such as bending, forming, blanking, drawing, rubber-forming, multiple punching, etc. Versatility, easy operation, and long life are claimed by the manufacturer, the Steelweld Machinery Div., Cleveland Crane & Engineering Co., Dept. RH, Wickliffe, Ohio.

Use ACTION Card, opposite page 64. Encircle No. 16



**ALINA CORPORATION**

- VERNIER AND SCALE IN DULL CHROME FINISH
- Hardened Stainless Steel
- Clear, Wide Vernier Scale
- Easier to read
- In handsome contour case

*Ask your dealer, or write:*

**401 Broadway  
New York, N.Y.**

Encircle No. 375 on Card, Opposite Page 65

MACHINE and TOOL BLUE BOOK

## Adjustable Solid and Spring Ejector Stock Stops

Brown & Sharpe adjustable stock stops for second operation screw machine work may be attached to standard collets. They are interchangeable in



regular spring collets for round and hexagonal stock and are made in two styles, spring ejector and solid, eliminating additional investment in special collets.

The operator selects the required stop and inserts it in a collet of corresponding size. A partial turn raises a stock pin in the collet slot and a few additional turns lock the stock securely in place in the collet, ready for use.

In the spring ejector type, two adjusting lock nuts on the end of the spring plunger control automatic ejection of workpieces of varying lengths.



Both solid and spring ejector stock stops are made in three sizes for use with No. 10, 11, and 22 spring collets. Brown & Sharpe Mfg. Co., Dept. BB, Providence 1, R. I.

Use ACTION Card, opposite page 64. Encircle No. 17

November, 1955

## DoALL Carbide Tipped END MILLS

### The Finest You Can Use

- Diamond ground cutting edges make perfect cuts.
- Hardened and ground shanks—burrs and nicks eliminated.
- Lapped centers—regrind with accuracy.
- Polished ground flutes reduce clogging.



Call DoALL—  
Consult classified phone  
directory for DoALL Service-  
Store that stocks gages, cutting  
tools, supplies, or Write

The DoALL Co.  
Des Plaines, Ill.

DoAll Stocks All  
Styles of Milling  
Cutters, but only  
one kind . . .  
the FINEST!

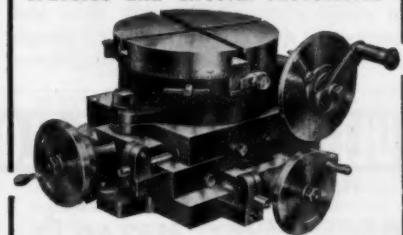
31

Encircle No. 376 on Card, Opposite Page 65

## The STEVENS Line

SINCE 1925

Showing 7½" Dial Type Rotary  
Table Mounted on compound  
table No. 1  
Traverse and Circular Movements-

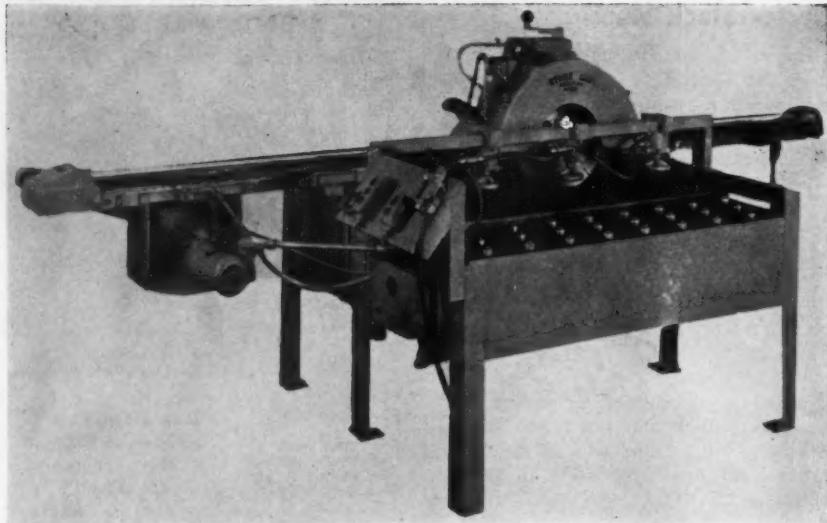


Made in larger size 12" dial type Rotary-  
compound table No. 2. Either unit usable  
separately. Five sizes of Rotary Tables.  
Adjustable tilting tables. Multiple spindle  
index centers. Screw head slotters. Vises.  
Write for Bulletins

The JOHN B. STEVENS Company  
SOMERSVILLE, CONN.

Encircle No. 377 on Card, Opposite Page 65

243



## Cutting Machine with Locking Roller Assembly

A traverse type cutting machine for plate and sheet stock, Model SS-20LR, has a locking roller assembly that locks it to a special channel type rail. This close integration of rail and machine is claimed to permit greater rigidity and control over the cutting job and assure longer wheel life with less breakage. In climb cutting, all chips, dust and sparks are quickly disposed of through the kerf in the table, giving the oper-

ator a clear view of his line of cut.

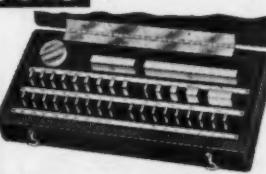
The machine uses the latest type abrasive wheels in the cutting of ferrous metals such as stainless steel and hot rolled plate. It employs a circular steel saw blade in the cutting of non-ferrous metals such as aluminum and copper, and also with non-metallic materials such as plastic, melamine and masonite.

The SS-20LR can cut  $\frac{1}{4}$ " stainless steel plate 4 feet long in 30 seconds or some 8 seconds per foot;  $\frac{1}{4}$ " aluminum plate,  $49\frac{1}{2}$ " long in 9 seconds; 1" melamine stock at the rate of 100 square

## ULTRA-CHEX GAGE BLOCKS *for Every Need!*

Supplied in one Superior Accuracy  
**5 MILLIONTHS  $\pm$  ACCURACY**  
**34 BLOCK SET (shown) \$132.50** 

**82 BLOCK SET ..... \$303.00 IN CASE**  
 These sets will supply the needs of any discriminating shop that must work to gage-block precision.  
**IMMEDIATE DELIVERY**



**9 Block Set**  
 For Individual Mechanic  
**\$24.75**  
 OPTICAL PARALLEL  
**\$6.00 Extra**

WRITE FOR ILLUSTRATED FOLDER  
 200-MT LAFAYETTE STREET • NEW YORK 12, N. Y.

**GEO. SCHERR CO., INC.**

Encircle No. 378 on Card, Opposite Page 65

MACHINE and TOOL BLUE BOOK

inches per minute; 1½" laminated plastic at the rate of 10 seconds per foot. In all cutting, it holds tolerances to .010". Stone Machinery Co., Dept. RS, Manlius, N.Y.

Use ACTION Card, opposite page 64. Encircle No. 18

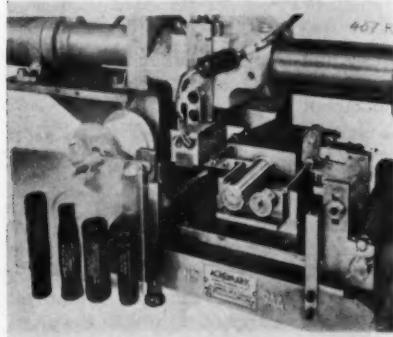
### Fixture holds parts for marking

A new combination type of fixture for holding plastic, metal and wood parts for mechanical marking has been announced by The Acromark Co., 15 Morrell St., Elizabeth, N.J. Fixture combines a driven rotary mandrel and a set of roller bearing cradle rolls to accomplish the controlled rotation of parts to be marked—when substantial marking pressure is necessary.

Illustration shows the fixture assembled in an air operated Model 9AA marking machine with electrically heated marking head. Marking is applied under heated pressure through a roll leaf transfer or color pigment tape. The automatic roll feed and reel are shown.

Over all size is approximately 14" long x 10" deep x 6" high. Load is carried both by the roller bearing mandrel and the cradle rolls. Machine permits either hot or cold marking—with or without electrically heated color transfer.

Use ACTION Card, opposite page 64. Encircle No. 19



November, 1955

### Get More Holes With DoALL Jobber Drills

Only DoALL has XL Drills  
(No. 60 through 1/4")

• Ground from solid

• Special surface treated edges

• Bright polished flutes

• Last longer, stay sharper

• More holes per grind

#### • General Purpose

—for short runs or production

#### • Heavy-duty Split Point

—for stain-  
less and other heavy  
duty work

Call DoALL

—see classified  
directory for nearest  
DoALL Service-  
Store, or write:

The DoALL Co.  
Des Plaines, Illinois

• 17/64" through  
1/2" are milled

Encircle No. 379 on Card, Opposite Page 65

### THE VISE WITH A THOUSAND GRIPS



'FLEXIBLE JAWS' grip all shapes. Grips secure and positive for precise milling, drilling and cutting operations. Eliminate the time and expense of blocking and shimming irregular pieces for toolroom machining. Applicable on any machine tool. Try it in your shop. Save time and dollars on small production runs.

WRITE FOR INFORMATION TODAY!



AMERICAN POSITIVE GRIP VISE CORP.

2-F Olivine Street  
Wellesley, Mass.

Encircle No. 380 on Card, Opposite Page 65

# Economy

...Another Word For  
**ACCURACY**



## **PLUS ATTRACTIVE PRICE**

For your duplication requirements in standard items, be sure to specify "ECONOMY" . . .

- ★ **"TRU-LOC" Adjustable Adapter Sleeves & Nuts**
- ★ **A. S. A. DRILL JIG BUSHINGS**
- ★ **A. G. D. PLUG & RING GAGES**

Always in stock to assure you immediate delivery.

Ask about our prices for salvaging your worn-out plug and ring gages.

**Catalog & Price**

**List Upon Request**



# Economy

TOOL & MACHINE CO.

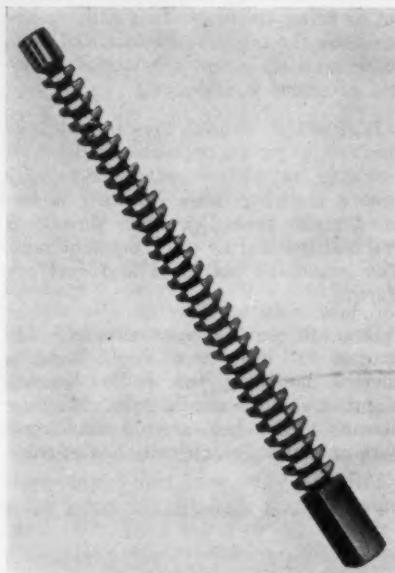
1829 S. 68th St. • Milwaukee 14, Wis.

Encircle No. 381 on Card, Opposite Page 65  
246

## **Hexagon broaches**

The du Mont Corp., Dept. MTB, Greenfield, Mass., has announced a new line of Minute Man high speed steel, push type hexagon broaches, available from stock in eight standard sizes from 3/16" hex to 3/4" hex.

Starting with a round pilot, broaches will reportedly finish a full hexagonal hole in a drilled, reamed or cast bore in one pass, in less than one minute. They may be used in either a hand-operated arbor press or a hydraulic



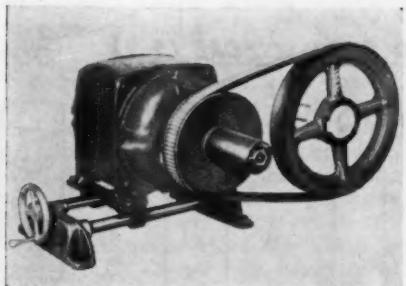
press and are recommended for tool and die work, sizing work and for hexagonal couplings.

Use ACTION Card, opposite page 64. Encircle No. 20

## **Variable speed pulley provides finger-tip speed changes**

A new variable speed pulley that provides ratios up to 3 to 1 at from 7 1/2 to 15 hp is claimed to be easily installed on new or old equipment and to change speed at finger tip pres-

MACHINE and TOOL BLUE BOOK



sure while machinery is in motion.

Used in conjunction with 1750 rpm motor, maximum hp is 10 with the No. 310 vsp base and 15 with the No. 315 vsp base. 1150 rpm motor affords 7½ hp with the No. 310 and 10 hp with the No. 315. Belt accommodated is Lovejoy No. 27 2¾" top width variable speed belt. Standard bores are 1¼", 1¾", 1½". Other specifications include 13.1 max. and 4.35 min. pitch diameter, length of bore 3¾" and max. bore 1¾". Lovejoy Flexible Coupling Co., Dept. B, 4829 W. Lake St., Chicago 44, Ill.

Use ACTION Card, opposite page 64. Encircle No. 21

### Lead hammer handles

Cook Shur-Grip drop forged steel handles are claimed to hold the hammer head firmly. They are available for molding 1, 2, 3, 4, 5 and 6 lb. hammers. A special safety notch gives firm alignment between head and hammer. The grip shape of the handle is said to assure easier, surer use. The handle can be used repeatedly in molding and remolding of lead hammers. Lawrence H. Cook, Inc., Dept. JP, 65 Massasoit Ave., East Providence 14, R.I.

Use ACTION Card, opposite page 64. Encircle No. 22



### Toolmaker's Microscope

Made by Bausch & Lomb...

Sold by DoALL

for Examination and Measurement  
in the shop,  
in the lab

- Speeds work
- Reduces error
- Unreversed image
- Cannot damage delicate parts

Call DoALL — consult yellow directory for nearest DoALL Service-Store that stocks cutting tools, gages, supplies—in Wards

The DoALL Co.  
Des Plaines, Ill.



Encircle No. 382 on Card, Opposite Page 65

## SPRING LOADED LIVE CENTER



Eliminate "Cold Welding" of your center. Use the accurate, rugged, reliable \*NIROL. The spring loaded Live Center that compensates for expansion and contraction in high speed operations.

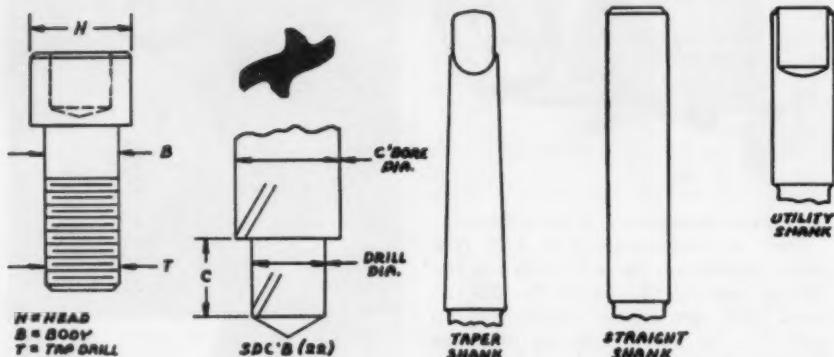
Write for complete information.

\*Reg. U.S. Pat. Off.

\* **NIROL** MANUFACTURING COMPANY  
900 H'WAY 22, N. PLAINFIELD, N. J.

Encircle No. 383 on Card, Opposite Page 65

## MOHAWK SUBLAND DRILL C'BORE (2-2)



### Drill-Counterbores for Fillister Head Cap Screws

The standard procedure now used by engineers in processing parts using Fillister head cap screws is to first drill with a standard drill and then follow with a standard piloted counterbore. There are three types of piloted counterbores to cover these applications:

head and body; head and tap drill; body and tap drill.

Mohawk Tools, Inc., Dept. JS, 910 Main St., Montpelier, O., has designed a series of Subland drill-counterbores (2-2) to accomplish the same operations in one pass. These tools are available for all three types and for any shank that may be required.

Use ACTION Card, opposite page 64. Encircle No. 23

### Work holder for drill presses

The Universal Vise and Tool Co., Dept. JS, Parma, Mich., has announced an improved version of its safety work holder for drill presses, featuring a split type collar for easier installation on the column of the press. It is no longer

necessary to remove the drill press head to install the work holder.

The standard model for round column drill presses is designed for movable table presses. Special models are available for those with stationary tables.

Use ACTION Card, opposite page 64. Encircle No. 24

**BOSTON UNIVERSAL ANGLE PLATE**



**A Precision Tool that Holds Work at Any Desired Angle.**

Horizontal motion is 360 degrees; vertical motion, 120 degrees. Fitted with vernier scale reading to 5 minutes.

**Puts Speed and Profit into Angular Drilling, Milling, Planing, Shaping, Grinding**

With a Boston Universal Angle Plate on the job, work is quickly set up on the table and but a few seconds are required to locate it at the desired angle. Indispensable in tool rooms and extremely useful in production runs, the Boston Universal pays for itself many times over by eliminating the necessity of expensive jigs and fixtures.

Made in several stock sizes. Write today for full information.

**US AUTOMATIC BOX MACHINERY CO., Inc.**

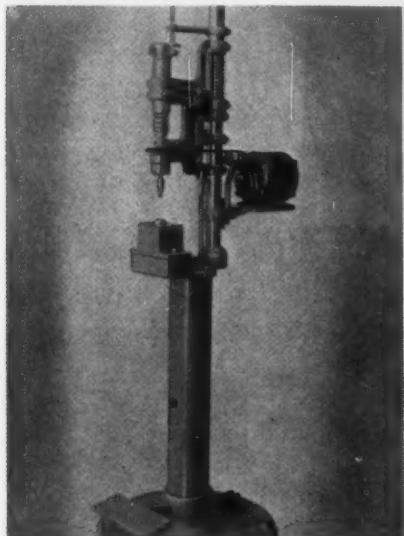
11 ARBORETUM RD.  
BOSTON 31, MASS.

Encircle No. 384 on Card, Opposite Page 65

MACHINE and TOOL BLUE BOOK

## Spin-impact riveter offered in economy model

The Airflex economy model vertical floor riveter is designed to do general riveting to a maximum of  $\frac{1}{4}$ " fasteners, based on solid mild steel. Either hollow or solid rivets may be used however, with capacities larger in aluminum and soft tubular rivets. Parts requiring a 7" max. throat and a 2 $\frac{1}{2}$ " max. gap may be accommodated. The model is manual with an option of either a foot pedal or hand lever.



Operation of the machine is comparable to the company's precision line of riveters, employing the same principle of high-frequency impacting by air and electrical spinning. Impacts range from 8000 to 16,000 blows per minute, controlled by a nose piston adjustment and optional air pressures from 40 to 100 psi. Spindle rotation is approximately 1200 rpm. Feed travel to  $\frac{1}{2}$ " maximum with positive, head frame stop. Lemert Engineering Co., Inc., Dept. HS, P.O. Box 282, Plymouth, Ind.

Use ACTION Card, opposite page 64. Encircle No. 25

## Get Better, More Accurate Cuts With **DOALL END MILLS**



Two Fluted Double End



Three Fluted Single End

### HIGH-SPEED STEEL

- Hollow ground spiral flutes...better chip removal and longer life
- "Hy" Helix...smoother cutting action
- Double back off...stronger cutting edges

Now—17 additional End Mill types... select from a complete line

### CARBIDE

Diamond ground cutting edges, lapped centers, non-clogging flutes

All types, sizes of H. S. Steel and Carbide in stock. Ask for new H. S. Steel End Mill Catalog—no obligation.

Call DoALL—see classified directory for nearest DoALL Service-Store, or write:

The DoALL Co.

Des Plaines, Ill.

45

Encircle No. 385 on Card, Opposite Page 65

## WALLS TU-WAY BELT SANDER



Full  
1/3 h.p.  
G. E. Motor

USE IT  
EITHER WAY

HORIZONTAL

VERTICAL

At last, a top quality industrial sander that provides all the most wanted features—yet sells for so little. **\$89.95**

complete with cord, plug, switch ready to use

Illustrated Literature on Request

A few desirable distributor territories still available.

**WALLS SALES CORPORATION**  
333 Nassau Avenue Brooklyn 22, N. Y.

Encircle No. 386 on Card, Opposite Page 65

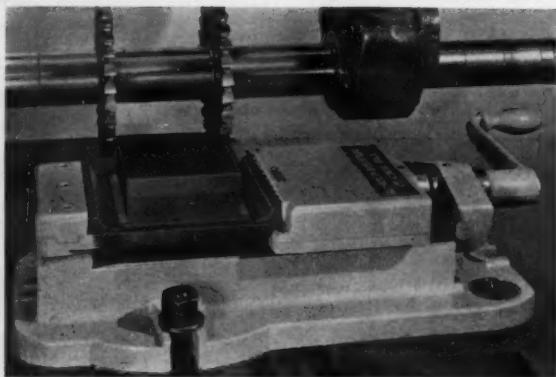
November, 1955

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## New Principle Milling Vise

The Imp "hold-down" precision milling machine vise eliminates the use of parallels, hammering, and improvised methods of holding work flat. An operator need only place the work on the base of the vise and tighten by hand. The work will be held as flat as though it were held on a magnetic chuck of a surface grinder, the manufacturer claims.

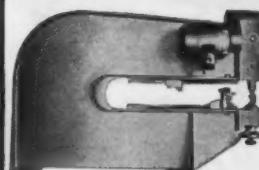
Jaws may be readily revolved for easy cleaning, or replaced with special form jaws for irregular work by the removal of the hinge pin. The standard vise opening is approximately 4 inches; however, a stretching block may be purchased to give a full 6 inch capacity. A swivel base is also



optional equipment. Holds material as thin as  $3/32"$ . Shallow depth gives better vision to work. All parts are interchangeable. Illinois Metal Products, 429-31 W. Superior St., Dept. RGB, Chicago 10, Ill.

Use ACTION Card, opposite page 64. Encircle No. 26

## G. V. METAL WORKER



285A

Capacities  
MODELS  
285-A       $1/8$  inches  
400-A       $15/64$  inches  
490-A       $5/16$  inches

### The Multi - Purpose Machine

For use in Straight, Circle, and Free Cutting, Beading, Offsetting, Forming, Nibbling, Slotting, Louvering, Stretching, Shrinking, Etc.

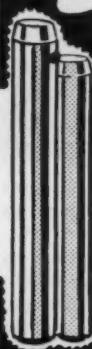
TECH-PACIFIC  
2811 LAFAYETTE  
NEWPORT BEACH, CALIFORNIA

Encircle No. 387 on Card, Opposite Page 65

250

For  
Literature  
or  
Information  
write:

## DOWEL PINS



### Immediate Delivery!

Standard Size Dowel Pins from  $1/8$ " to 1" diameter and from  $3/8$ " to 6" length supplied in .0002 and .001 over basic sizes. Unless otherwise specified, .0002 oversize will be furnished.

Dealer's Inquiries  
Invited.

SCHULTZ & ANDERSON CO  
111 EDISON PLACE,  
NEWARK 5, N.J.

Encircle No. 388 on Card, Opposite Page 65

MACHINE and TOOL BLUE BOOK

## Hydraulic vise is controlled by foot pedals

A new hydraulic vise, which is reported to speed up production line work, has been announced by the Columbian Vise & Mfg. Co., Dept. RH, Cleveland 4, O.

Known as No. 1004, it is controlled by 2 simple foot pedals—one for power, the



other for release. Both of the operator's hands are free for handling and positioning. The stop control is adjustable so that the vise grips and holds production work with a single power stroke.

The hydraulic power pump employs a recently developed cartridge which can be removed and replaced as a unit. Cartridge contains the main check valve, release valve and by-pass relief

## DoALL BLACK GRANITE STRAIGHT EDGES Made Accurate • Stay Accurate

Harder than  
glass  
Smooth • Rigid

Not affected  
by  
temperature  
or humidity  
changes

Call DoALL

— see classified  
phone directory  
for nearest DoALL  
Service-Store. For  
granite surface  
plates, straight edges,  
parallels and V-blocks;  
gauges, cutting tools,  
supplies —

.00005"  
accuracy

The DoALL Co.  
Des Plaines, Illinois

27

Encircle No. 389 on Card, Opposite Page 65

## DORMAN AUTOMATIC REVERSE TAPPERS

- Automatic Torque Control, One Minute to Adjust, Prevents Tap Breakage, Operator Need Not Be Skilled.
- WIDE RANGE TAP CAPACITY.
- NO. 1A FRICTION DRIVE TAPPER — capacity No. 2-56 to  $\frac{3}{8}$ " in Steel— $\frac{1}{2}$ " in Aluminum.
- NO. 2B POSITIVE TAPPER — capacity  $\frac{3}{8}$ " to  $\frac{7}{8}$ " in Steel.
- NO. 3A POSITIVE TAPPER — capacity  $\frac{1}{2}$ " to  $1\frac{1}{2}$ " in Steel— $\frac{1}{2}$ " to  $\frac{3}{4}$ " Pipe Taps.
- NO. 4A TAPPER — capacity  $\frac{3}{4}$ " to 2" in Steel including Pipe Taps.
- PRODUCTION THREADERS with Round Split . . . Button DELIVERY . . . Acorn Dies.

Priced from **\$50.00**  
Write for  
Bulletin  
IMMEDIATE  
DELIVERY

THRIFTMASTER PRODUCTS CORPORATION

Division of Thomson Industries, Inc.

1020 N. PLUM STREET, LANCASTER, PA.

STANDARD UNIVERSAL ADJUSTABLE AND SPECIAL FIXED CENTER DRIVERS

Encircle No. 390 on Card, Opposite Page 65

251

valve.

Vise closing speed is  $1\frac{1}{4}$  inches per pump stroke. Replaceable tool steel jaw faces close and grip without damaging the held object. Full vise opening can be accomplished in 4 seconds. Maximum hydraulic pressure is 7000 psi. Maximum jaw pressure is 4000 lb. Safety valve protects against overloading.

Use ACTION Card, opposite page 64. Encircle No. 27

**New KNURLMASTER Hand Knurler**  
**\$13.50**



No distortion—  
even on  $1/8$ " stock!  
MODEL "C"

For small production runs on  $1/8$ " to 1" stock. Exclusive screw design gives perfect knurl pattern. Furnished with 3 hardened knurls of standard  $1/2$ " dia. Forged steel frame is self-centering. Write for illustrated folder.

Dealer Inquiries Invited

**ROCKWIN MANUFACTURING CO.**

43-45 Rose St. New York 38, N.Y.

Encircle No. 391 on Card, Opposite Page 65

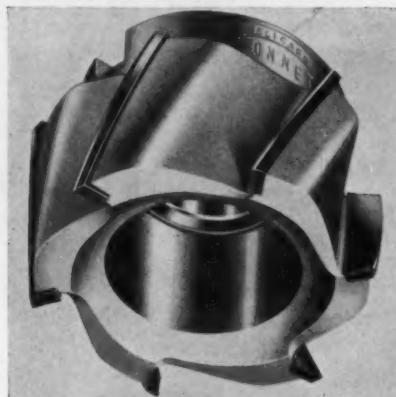


252

Encircle No. 392 on Card, Opposite Page 65

### Shell-end mills carbide tipped over length of flute

Helical carbide shell-end mills which are carbide tipped over the full length of the flute have been announced by Sonnet Tool and Mfg. Co., Dept. B, 576 N. Prairie Ave., Hawthorne, Calif.



Mills combine the hardness of one-piece carbide tips with the cutting efficiency of a true helix flute design. The included cutting angle remains constant over the full length of the carbide cutting edge, distributing the cutting load uniformly. The resultant shearing cutting action is claimed to reduce impact, chatter and crumbling of the cutting edge.

When used as face mills, the Helical carb design permits the carbide insert to be slid forward as tips wear.

Use ACTION Card, opposite page 64. Encircle No. 28

**HEINRICH**  
**Grip-Master**  
Screwless Vise  
**GRIPS WITH SPEED**  
**CUTS TOOLING COSTS**

Step up drill press production with the Heinrich "Grip-Master" Screwless Vise—with the patented "Circle Grip" hammer blows cannot break. Work is automatically leveled; jaws set instantly, effortlessly. 3", 4", 6", 8" jaw widths; ideal as base structure for drill jigs and fixtures.

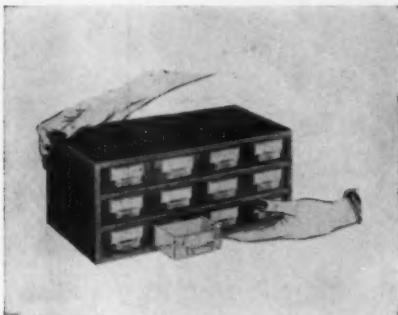
**HEINRICH TOOLS, INC.**  
DEPT. 105-L • RACINE, WISCONSIN

MACHINE and TOOL BLUE BOOK

## Transparent cabinets

Work bench cabinets with clear plastic drawers for filing small parts, tools, bolts, nails, etc., have steel frames and come in grey or light green hammer-tone finish. Drawers have two removable dividers which separate them into three sections. Metal label slides are provided should detailed data be desired. Drawers have anti-spill safety catches. Cabinet sizes range from 12 drawers to 32 drawers. Ben Gilbert Co., Dept. MG, 5 Crossman Pl., Huntington, N.Y.

Use ACTION Card, opposite page 64. Encircle No. 29



## Deoxidizer prepares aluminum for spotwelding

Kelite Process 822 is a liquid, miscible in water, for the removal of oxides and scale from aluminum prior to spotwelding. It is used by immersion in type 316 stainless steel, tygon, rubber, or glass lined equipment. No critical time or temperature control is required.

Aluminum prepared for spotwelding with this product shows low micro-ohm resistance. Good "mileage" performance on welding tips is achieved. Welded specimens attain high pull-test rating. Deoxidizer is not volatile nor flammable; no toxic nor corrosive vapors. Kelite, Dept B, 1250 No. Main St., Los Angeles 12, Calif.

Use ACTION Card, opposite page 64. Encircle No. 30

November, 1955

## To Saw Faster Use The Right Saw Band

Let the DoALL man help you choose the correct blade for this job from DoALL's complete selection — a type for every contour or cut-off sawing need.

Welded lengths for any make machine or 100' and 500' coils.

Call DoALL

See classified phone directory for nearest DoALL Service-Store, or write:

**The DoALL Company**  
Des Plaines, Illinois

Demon® High-Speed Steel Saw Bands cut up to 6 times faster, last up to 10 times longer. Send for literature.

49  
Encircle No. 393 on Card, Opposite Page 65

## METAL PRODUCTION CAPACITY AVAILABLE

For long or short production runs of large or small parts, tools, jigs or fixtures. Also dies, gages, special machinery.

Keller Profilometer-Duplicator, 10" x 24"  
Presses up to 450-ton, 48" x 48", Triple Action Planers up to 20-foot Stroke, 72" x 72"  
Radial Drill Presses up to 8-foot, 18" column  
Lathes up to 158" e.e., 57½" gap, 40° swing  
Boring Mills up to 120" Bed, 90° Horizontal, 60° Vertical

Also Milling Machines, Grinders, etc. Complete production facilities — experienced machinists.

INQUIRIES INVITED ON CONTRACT BASIS OR INDIVIDUAL QUOTATION

**PIVOT PUNCH  
& DIE CORPORATION**  
NORTH TONAWANDA, N. Y.  
Phone JA. 1200

Encircle No. 394 on Card, Opposite Page 65

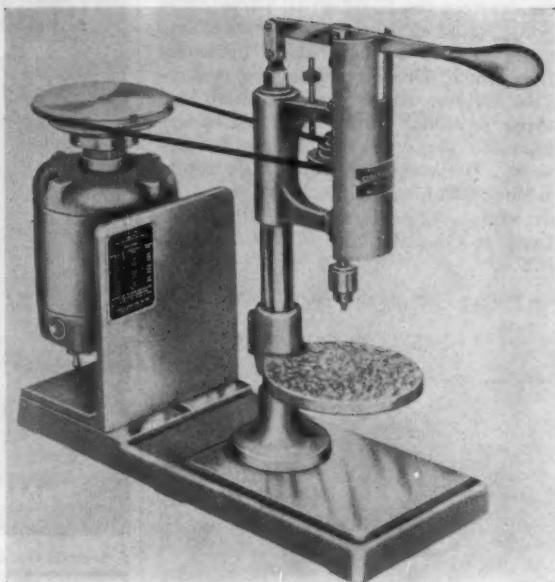
253

## Precision Sensitive Drill Press

The Sloan & Chace Model MD precision sensitive drill press drills holes from the smallest up to  $\frac{1}{8}$ " diameter.

The column and base is a one piece cylindrical casting, ground to fit the reinforced spindle bracket and table sleeve. The spindle and spindle bushings are of hardened steel, ground and lapped to fit. Spindle is actuated by an operating lever connected to it by a ball bearing link which eliminates end play in the spindle movement. Spindle travel is controlled by an adjusting screw mounted in the spindle bracket.

The totally enclosed ball bearing motor mounted on a sliding base permits easy speed changes over the complete range of eight speeds—from 2,000 to 9,900 rpm. Sloan & Chace



Mfg. Co., Inc., Dept. RS, 344 Hickory St., Kearny, N.J.

Use ACTION Card, opposite page 64. Encircle No. 31

### Sliding head floor drill has new safety features

The Cincinnati 21" sliding head floor drill is available with a box or round column, and box column machines are

offered in multi-spindle arrangements.

Every important element of the new drill is built in and conveniently located. Shipped complete with motor and controls to overcome installation delays, it

### So many standard styles... one must be just right for you!



For 66 years we have been producing metal-working tools and adding to our standard line. Today we have PUNCHES and DIES in a large range of round, flat, oval, and square sizes to fit most makes of punch presses immediately available from stock at regular low, standard prices.

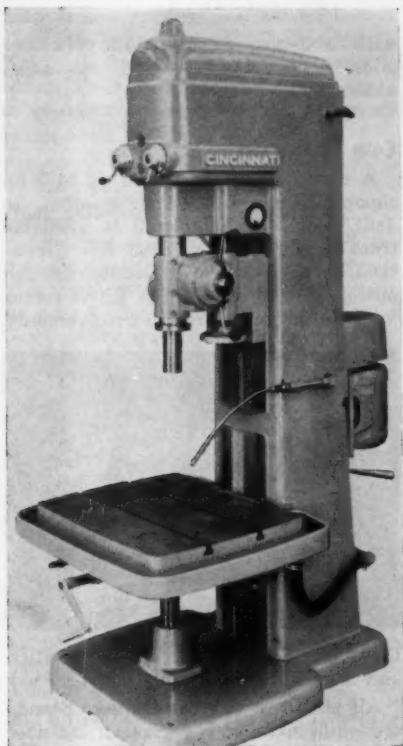
Send for our complete catalog sheets.

**T. H. LEWTHWAITE MACHINE CO.**

312 East 47th St., New York 17, N. Y.

Encircle No. 395 on Card, Opposite Page 65

MACHINE and TOOL BLUE BOOK



is ready to operate as soon as power leads are connected to the fully enclosed electrical panel. An interlock is built into the door of the panel to prevent opening it unless the disconnect switch is in the "off" position. A transformer is supplied with all machines operating on 220 volts or over to reduce voltage at the push button station to 110 volts.

Geared power feed is standard equipment. A simple selector is used to obtain any of four rates of feed which are engaged through a positive-jaw clutch. The entire power feed mechanism is housed in the head. Drill has a 2 or 3 h.p., 1800 or 1500 rpm motor. Cincinnati Lathe and Tool Co., Dept. BB, Cincinnati 9, Ohio.

Use ACTION Card, opposite page 64. Encircle No. 32

## NEW DoALL Demon High Speed Steel

### SAW BANDS

- Up to 10 times faster cutting!
- Up to 30 times longer life!
- Full safety blade

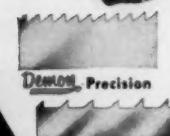


Call  
DoALL

—see directory  
for nearest DoALL  
Service-Store that  
stocks cutting tools,  
gages, supplies.

or Write

The DoALL Co.  
Des Plaines, Ill.



4 1/4" to 1"  
2 to 10 pitch

Encircle No. 396 on Card, Opposite Page 65

the Quality Line

STEEL  
**Stanho**  
PRODUCTS

*Stainless Steel*  
**TAPER PINS**

Complete stock, all sizes #7/0 through #14.  
Special sizes to order.  
Milled or Centerless Ground (Precision Type)  
Made to accurate tolerances.

Also "Stanho" Taper Pins made from selected  
screw stock, Monel, Brass, Aluminum  
or other metals. Clean bright finish  
—prompt shipments.

Write for  
description  
and prices.

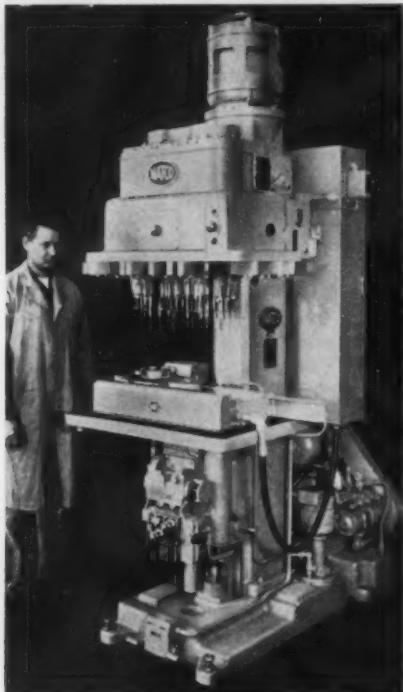
JM-6

**STANDARD**  
HORSE NAIL CORP.  
Since 1872  
NEW BRIGHTON, PA.

Encircle No. 397 on Card, Opposite Page 65

### Three machines in one

The development of a new drilling machine which combines the operations of three machines in one has been an-



nounced by the National Automatic Tool Co., Inc., Dept. HS, Richmond, Ind. The Natco H-6 light sensitive, adjustable, multi-spindle driller and tapper,

with a 3-position automatic fixture slide, drills, chamfers and taps holes automatically.

Use ACTION Card, opposite page 64. Encircle No. 33

### Cam feed units

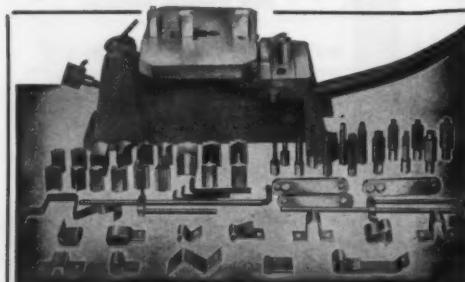
A new line of cam units up to 5 hp capacity, furnished in four sizes, to drill, ream, tap, and mill is available from Zagar Tool, Inc., Dept. RH, Cleveland, O. Each unit is self-contained. All power is derived through single motor with no air or hydraulic involvements.



Units can be mounted in any position and any number of units can be used.

All sizes are cam-controlled. Standard equipment with each unit includes four standard purpose cams and complete sets of cycle change gears. Feeds and speeds are of infinite variation, and charts are provided to aid in selection of proper speeds. Cam control is claimed to insure positive split-second cycling.

Four drives are furnished: Cone



**Multiform** BENDER CUTTER

CUTS, BENDS, PUNCHES

Available in hand or air operated models, the MULTIFORM is shipped complete with full assortment of dies and mandrels to punch, bend and cut round or flat brass, bronze, aluminum, steel, etc., up to  $\frac{1}{4}'' \times \frac{1}{2}''$  as illustrated, other models up to  $\frac{1}{4}'' \times 6''$ .

**J. A. RICHARDS CO.**  
KALAMAZOO, MICH.

Encircle No. 398 on Card, Opposite Page 65

MACHINE and TOOL BLUE BOOK

pulley, direct motor, stub-shaft, or gear box. Oiling systems are self-contained. Drill size range is from  $\frac{3}{8}$ " through 2". The cycle time ranges from two seconds through 410 seconds. The stroke range is from  $2\frac{1}{2}$ " through 5". Spindle speeds range from 300 through 4032 rpm.

Use ACTION Card, opposite page 64. Encircle No. 34

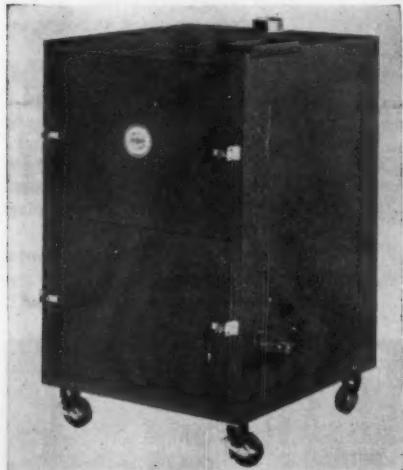
### Dust collectors have casters

All Torit dust collectors of both the cabinet and cyclone type are now available with casters as optional equipment, to permit the collectors to be moved more easily, quickly and quietly.

The casters are made of hard rubber, 3" in diameter and 1" wide. Two of the casters in each set are provided with locks, and all are welded to the bottom of each unit.

Seventeen dust collectors and their adaptations are affected by the development of this accessory, ranging from the 160 pound Model 54 to the 1130 pound Model 122, although they will undoubtedly prove more popular for the smaller machines in the line. Shown is the Model 66 cabinet-type collector. Torit Manufacturing Co., Dept. RB, 287 Walnut St., St. Paul 2, Minn.

Use ACTION Card, opposite page 64. Encircle No. 35



**DoALL**

### H. S. STEEL END MILLS

Hollow ground spiral flutes afford better chip removal and increase tool life.

- Double and Single End Styles
- Straight and Tapered Shanks
- Straight, Corner Rounding and Ball Ends
- Sizes 1/16" to 2"



Call DoALL — consult classified phone directory for DoALL Service-Store that stocks gages, cutting tools, supplies, — or write

The DoALL Co.  
Des Plaines, Ill.

DoALL has Carbide  
End Mills,  
too!

20

Encircle No. 399 on Card, Opposite Page 65

## GEARS



Precision-cut to your specs. 96 pitch to 5/7 D.P. —  $\frac{1}{4}$ " P.D. to 18" P.D. Any type or quantity. Any gear material. (No stocks.) Write for data.

ABART SPEED REDUCERS — over 75 types and sizes described in pocket-size catalog — free on request.



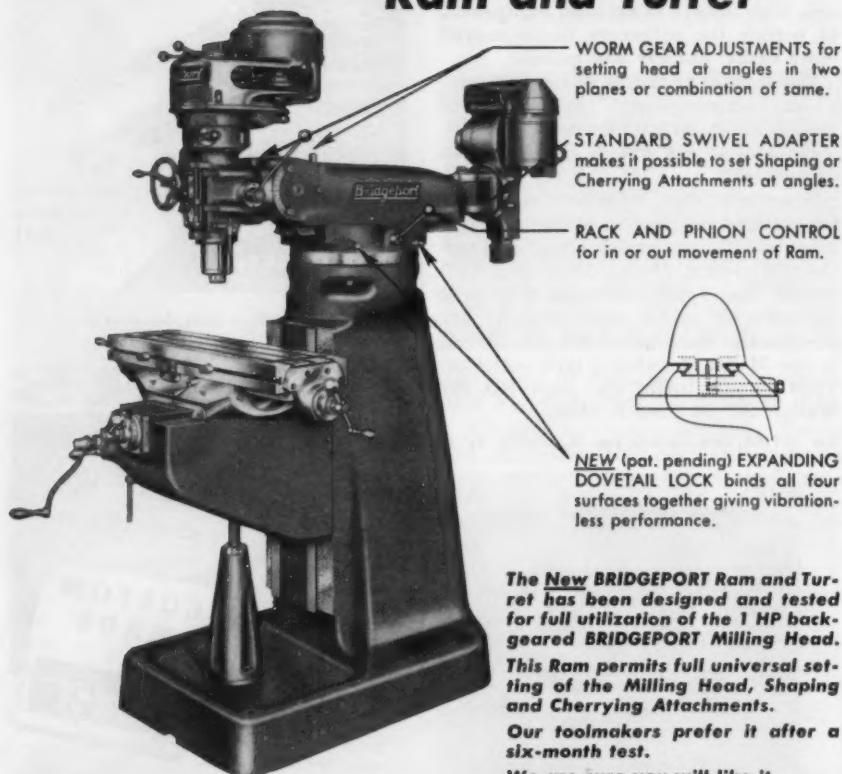
**Abart GEAR & MACHINE CO.**

4829 WEST 16th ST. • CHICAGO 50, ILL.  
Encircle No. 400 on Card, Opposite Page 65

# PRESENTING—

## the NEW *Bridgeport*

### Ram and Turret



The **New BRIDGEPORT** Ram and Turret has been designed and tested for full utilization of the 1 HP back-gearred BRIDGEPORT Milling Head. This Ram permits full universal setting of the Milling Head, Shaping and Cherrying Attachments. Our toolmakers prefer it after a six-month test. We are sure you will like it.

***Bridgeport* MACHINES, INC.**

Bridgeport, Connecticut

Manufacturers of High Speed Milling Attachments and Turret Milling Machines

Encircle No. 401 on Card, Opposite Page 65

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MACHINE and TOOL BLUE BOOK



# Literature

## CATALOGS AND BULLETINS AVAILABLE FROM MANUFACTURERS

For copies of the literature in which you have an interest use the postage-paid postcard between pages 234-235. Merely circle the identifying number and mail the postcard.

**1. Mill Attachment.** A new bulletin illustrating and describing the new Axelson type 30 precision "all-angle" mill attachment has been announced by the Axelson Mfg. Co., Div. of U.S. Industries, Inc. Dept. MB, 6160 S. Boyle Ave., Los Angeles 58, Cal. The milling attachment is a quill type having  $3\frac{1}{2}$ " travel and is said to be ideally suited for milling, boring, drilling, reaming and grinding operations.

**2. Engineering Service.** Literature is available from Alar Design Inc., Dept. MTB, 2347 Ferguson Rd., Cincinnati 38, O., describing their complete engineering facilities. Alar is known for preliminary research and design, production design and engineering, tool design, tool making, planning and processing, plant layout, technical writing and art manual compilation and time methods study.

**3. Machinery Movers.** The Acorn Co., Dept. MT, 1482 S. Milwaukee St., Denver 10, Colo., has literature available describing and illustrating their Mighty Mover, designed to solve heavy moving problems. It is said one man can move

machines and heavy equipment. Each mover has two 4-inch cast iron wheels.

**4. Gear Gage and Hobbing Control.** The automatic gear gage and hobbing machine control is claimed to eliminate inspection by hand methods; immediately detect machine setup errors; prevent production of scrap gears; permit working to closer tolerances; increase hob life; and increase production efficiency and reduce cost. The type 80 is said to be a new concept in the inspection of gears and the control of hobbing machines. Airborne Instruments Laboratory, Dept. BB, 160 Old Country Rd., Mineola, L.I., N.Y.

**5. Lubrication Equipment.** Alemite Div., of Stewart-Warner Corp., Dept. MBB, 1826 W. Diversey Ave., Chicago 14, Ill., has published a catalog covering their complete line of high pressure lubricators; low pressure dispensers; loader-pumps; transfer pumps; hose and components; hose reels; lubrication fittings; conveyor trolley wheel lubricators; and miscellaneous equipment. Illustrations and specifications are included.

**6. Stainless Steel.** Additional technical information on AM 350, the new stainless steel that is said to bridge the gap between 300 and 400 series, is included in a 10-page booklet now being offered by Allegheny Ludlum Steel Corp., Dept. B, 2020 Oliver Bldg., Pittsburgh 22, Pa. The booklet is entitled "AM 350, A Chromium-Nickel-Molybdenum Stainless Steel Hardenable by Subzero Cooling or Double Aging."

**7. Cam-Driven Drill Units.** A new 12-page catalog, available from the Morris Machine Tool Co., Dept. TBB, 933 Harriet St., Cincinnati 3, O. It provides complete feature and technical information concerning the new Morris Cam-Matic drill units. It contains line drawings, photographs, descriptions, and specification charts covering two models of the automatic cam-driven drill units, including three types of drive arrangements and three possible mounting positions.

**8. Air-Power Devices.** The Bellows Co., Dept. BMT, 222 W. Market St., Akron, O., has announced the release of bulletin ML-3, illustrating and describing the complete line of controlled air-power devices. The eight-page bulletin has color illustrations of the Bellows air motor and interchangeable valves along with information on drill press feeds, vises, hydro-checks, rotary feed and index tables, self-contained drilling units, and valves and cylinders.

**9. Mounted Wheels.** Chicago Wheel and Mfg. Co., Dept. MTB, 1101 W. Monroe St., Chicago 7, Ill., is making an offer of two mounted wheels for actual job testing. These  $\frac{3}{4}$ " by  $\frac{1}{2}$ " straight wheels on  $\frac{1}{8}$ " mandrel are being offered to demonstrate the uniformity of size, shape, grain, grade and abrasive bond of every Chicago wheel.

**10. Steel Stock.** Crucible Steel Co. of America, Dept. MB, Oliver Bldg., Pitts-

burgh 22, Pa., has literature available describing high quality free machining alloy steel applications, and literature on squares, flats, rounds and hexagons. Recommendations, composition and applications are included along with Max-El metallurgical data sheets upon request.

**11. Electronic Microcomparator.** Literature is available from the Cleveland Instrument Co., Dept. B, 735 Carnegie Ave., Cleveland 15, O., describing and illustrating their opposed-head Micro-AC electronic Microcomparator and their Autosort model 101 electronic gaging and sorting unit. The Microcomparator is designed for checking gage blocks in millionths or half-millionths, and the gaging and sorting unit is said to gage parts up to 3" length and  $\frac{3}{4}$ " O.D.

**12. Plastic Steel.** Said to be durable, permanent, non shrinking and non expanding, Devcon Plastic Steel is claimed to be excellent for making jigs, molds, models, fixtures, forming dies, salvaging metal parts, rebuilding machinery, plumbing and automotive repairs. Descriptive and illustrated literature is available from the Chemical Development Corp., Dept. B, Danvers, Mass.

**13. Granite Surface Plates.** Challenge Machinery Co., Dept. MTBB, Grand Haven, Mich., has literature available on their complete line of new Clovis-Black granite surface plates which are said to guarantee surface accuracy to .00005". Made from deep earth granites, they are available in sizes from 8"x12"x2" to 72"x144"x16" with 0 or 2 or 4 ledges with surface accuracy from 2 thousandths to 50 millionths of an inch.

**14. Chucks.** Literature is available from the Cushman Chuck Co., Dept. BB, 806 Windsor St., Hartford 2, Conn., describing their complete chuck line. The Accra-Set chuck which is said to per-

FIRST CLASS  
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SEC. 34.9, P. L. & R.  
WHEATON, ILLINOIS

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NOV. 1955

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# ENGRAVE

## PLUG AND RING GAGES

*in your own shop*



*Lowest set-up time  
for unskilled labor*



GAGES by BROWNE & LAIL, Santa Monica

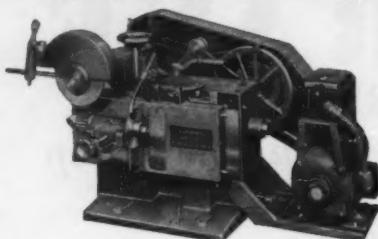
Many leading manufacturers have found the NEW HERMES the most versatile portable engraver for rapid marking of tools—nameplates—panels—dials.

- Adjustable for 15 ratios.
- Self-centering holding vise.
- Automatic depth regulator.
- Adjustable copy holders.

Send for Catalog No. IM-28

**NEW HERMES ENGRAVING MACHINE CORP.**  
13-19 University Pl., New York 3, N. Y.

# Wardwell Saw Grinder, "35T"



Write for  
Bulletin 35T

Sharpens Metal  
Saws in Gangs . . .  
Saves Money

Sharpens up to 115 saws .015" thick at one time, better than new. Includes slitting and screw slotting saws, and milling cutters up to 5½" diameter.

Completely automatic. All you do is start the machine. It does the rest.

"35T" saves money for you by greatly increasing saw life. You owe it to yourself to investigate this remarkable machine.



## WARDWELL MANUFACTURING CO.

3807 Ridge Road Cleveland 9, Ohio

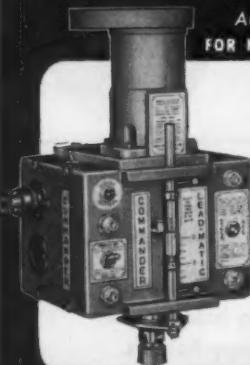
Maker of largest line of saw and tool sharpening machines

Encircle No. 403 on Card, Opposite Page 65

## Commander LEAD-MATIC Tapper

Automatic Tapper with Lead Screw  
FOR HIGH PRODUCTION PRECISION TAPPING

- Precision Ground Lead Screws Assure Finest Threads
- Electrically Controlled Cycle or Jog Tapping Action
- Hand, Foot or Fixture Switch Control
- Easily Adapted to Any Drill Press
- Range #0 to 3/4"



Built for high production tapping . . . precision or otherwise, the Commander Lead-Matic Tapper makes any drill press a precision tapping unit, even with inexperienced operators. Electric control of Cycle or Jog tapping action provides versatility to handle any job . . . automatic tap reversal eliminates drill press motor reversing and speeds tapping. Compact, ruggedly built, easy to operate, the Commander Lead-Matic Tapper will cut your tapping costs and reduce rejects to a minimum.

Write for illustrated circular and  
name of nearest Distributor.

Commander MFG. CO.

4227 W. KINZIE ST. • CHICAGO

PRODUCT OF COMMANDER . . . BUILDER OF PRODUCTION TOOLS

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MACHINE and TOOL BLUE BOOK

mit minute adjustment to .0005" has been especially designed for minute accuracy which must be held to closer limits than possible with the standard scroll-type chucks.

**15. Electric Furnaces.** The new catalog of Cooley electric furnaces and ovens gives a complete description, specifications, dimensions, temperature and control information on the bench and floor type general purpose electric furnaces;

high speed electric furnaces; recirculating furnaces; electric ovens; and industrial box furnaces. Also discussed is the new controlled atmosphere tool room furnace. Cooley Electric Mfg. Corp., Dept. MBB, 38 S. Shelby St., Indianapolis 7, Ind.

**16. Granite Surface Plates.** Literature describing and illustrating the complete line of black granite surface plates, angle plates, parallels and straight

**Fiske's**  
Since 1870

**"MAGIC"  
COMPOUND**

### **THIS WATER SOLUBLE CUTTING COOLANT STAYS MIXED**

Fiske "MAGIC" Compound, when dissolved in water, goes into a permanent emulsion . . . will never separate. It cools, lubricates and produces a high finish. Lengthens tool life. There's nothing so good for milling, drilling, grinding, turning, sawing, threading, wire drawing and stamping. Does not become rancid. Try Fiske "MAGIC" Compound and see the improvement in your work.

Information on each of the many Fiske Lubricating Specialties is available in bulletin form. Send for bulletins describing lubricants of interest to you.



**FISKE BROTHERS REFINING CO.**  
Newark 5, N. J. and Toledo 5, Ohio  
**M E T A L W O R K I N G L U B R I C A N T S**

Encircle No. 405 on Card, Opposite Page 65

November, 1955

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edges, is available from Collins Microflat Co., Inc., Dept. MB, 2326 E. Eight St., Los Angeles 21, Cal. The newest addition to the line is the T-Slot surface plate. Available in sizes up to 72" x 144" they are equipped with either standard or special T-Slot.

**17. Press Room Equipment.** A new press room equipment catalog released by the Durant Tool Supply Co., Dept. MTB, 136 S. Water St., Providence, R.I.

describes and illustrates many of the newer items not included in previous editions. Covered are 16 models of roll feeds, ram operated press feeds, ram operated scrap choppers, straightening machines, coil cradles, two-hand lever controls, and two new vises for machine shop and toolmakers use.

**18. Mechanical Pressure Gage.** A new engineering brochure containing data on the latest Dillon development, the

## use Hanna Valves for exacting CONTROL



**HAND  
OPERATED  
SOLENOID  
FOOT  
OPERATED  
"FLO-SET"  
PILOT VALVES**



Hydraulic and pneumatic cylinder performance is dependent on the efficiency of the control valves used. That's why it pays to use Valves made by a leader in cylinder manufacture. For more than fifty years, the Hanna name has been synonymous with quality. With Hanna Valves, you have a selection to meet every cylinder operating need, plus the advantages of Hanna engineering services. Get your local Hanna Representative's name from your classified telephone directory or write for complete Valve data.



**Hanna Engineering Works**

HYDRAULIC AND PNEUMATIC EQUIPMENT CYLINDERS VALVES DIVISIONS

1754 ELSTON AVENUE

CHICAGO 22, ILLINOIS

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MACHINE and TOOL BLUE BOOK

**\$2,190\*** PUTS A BRAKE LIKE THIS  
TO WORK IN YOUR PLANT

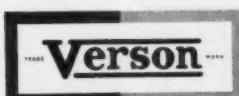


**BIG**  
**16 ga. x 78"**  
**CAPACITY**  
(25 TONS)  
**AVAILABLE**  
**FROM STOCK**

Now you can buy a full power press brake as easily as buying a new automobile. Just pick out the standard model you want, send an order and your brake will be shipped from stock. Two models to choose from — the 16-48 has a capacity of 16 ga. x 48" and is priced at \$1,455.00\*; the 1062, shown above, has a capacity of 16 ga. x 78" and is priced at \$2,190.00\*. Write for specs.

\*F.O.B. Chicago

A Verson Press for every job from 60 tons up.



ORIGINATORS AND PIONEERS OF ALLSTEEL STAMPING PRESS CONSTRUCTION  
**VERSON ALLSTEEL PRESS CO.**

9303 S. Kenwood Avenue, Chicago 19, Illinois  
So. Lamar at Ledbetter Drive, Dallas, Texas

MECHANICAL AND HYDRAULIC PRESSES AND PRESS BRAKES • TRANSMAT PRESSES  
TOOLING • DIE CUSHIONS • VERSON-WHEELON HYDRAULIC PRESSES

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November, 1955

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switch model mechanical pressure gage has been released by W. C. Dillon & Co., Inc., Dept. MMB, 14620 Keswick St., Van Nuys, Cal. Besides details of the switch arrangement and ratings, there is included a 0-10,000 pound range in the line, and dimensions and latest prices are included.

**19. Automatic Drill Units.** Dumore Precision Tools, Dept. BB, Racine, Wis., has literature available describing and

illustrating their line of automatic drill units with built-in controls. Included with specifications is information covering mounting and operating accessories.

**20. Diamond Tools.** A four-page two-color illustrated catalog describing the line of Colmonoy set diamond tools for specialized grinding wheel dressing operations is now available from Diamonds & Tools, Inc., Dept. MB, 19345

**A SMALL LOT  
METAL STAMPING SERVICE  
AT LOWEST POSSIBLE DIE COST**

**FIRST...In Experience • In Know-how**

- In Research • In Quality
- In Service

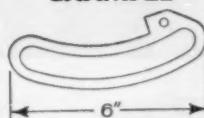


The sketch briefly describes the cost of a typical part made for one of our thousands of customers.

We have a short run stamping service to offer beyond comparison.



**EXAMPLE**



MAT'L C.R. STEEL  
\$63.20 for first  
100 pieces includ-  
ing tools.  
\$5.20 for each  
additional 100  
pieces plus mate-  
rial.

Factory trained repre-  
sentatives in all centers.  
Write for full details.

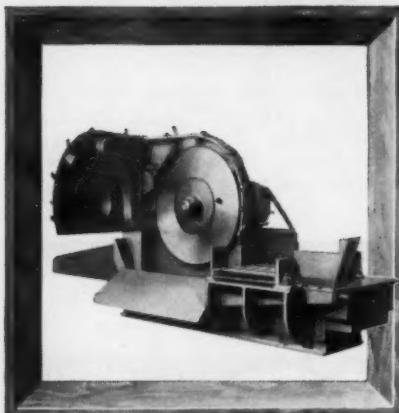
**DAYTON ROGERS  
Manufacturing Company**

MINNEAPOLIS 7C, MINN.

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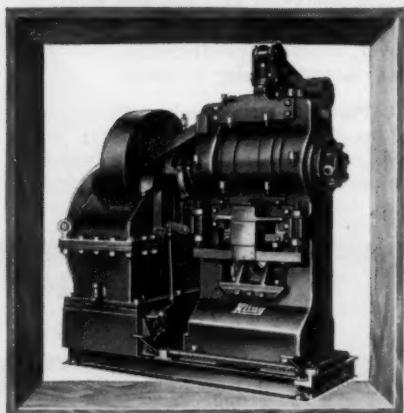
MACHINE and TOOL BLUE BOOK

# Friction Sawing



KLING FRICTION SAWS . . . 10 Sizes  
Size 4200 Illustrated

# Guillotine Shearing



KLING GUILLOTINE SHEARS . . . 5 Sizes  
No. 4 Illustrated

*Both Attain New Popularity  
Due to Recent **Kling** Improvements!*

**KLING FRICTION SAWS** make possible faster cutting of steel shapes (structurals and solids) without changing set-up. Also, new KLING developments provide semi-automatic controls for regulating the speed of the carriage and introduce other valuable advancements. Ask for list of users in your industry and send for Bulletins 4200 and 9200 giving you full technical data.



**KLING GUILLOTINE SHEARS** have been completely redesigned to assure users an even wider range of capacities and still sturdier construction. Some of the latest features include fully enclosed power drive and speed reduction unit . . . high tensile strength ductile frame on shear unit . . . shock-resistant alloy tool steel blades . . . new type guarding . . . and welded steel construction base.

*Ask for Bulletin 100 illustrating and describing  
Complete Kling Line of Metal Working Machines.*

Since 1892

# Kling



Rotary Shears



Double Angle Shears



Punches



Combination Shear,  
Punch & Coiler



Angle Bending  
Rolls



Plate Bending  
Rolls

Encircle No. 409 on Card, Opposite Page 65

November, 1955

1083MM

**KLING BROS. ENGINEERING WORKS**  
1320 N. KOSTNER AVE., CHICAGO 51, ILL.

Export Distributor: Simmons Machine Tool Corp., 50 E. 42nd St., New York 17, N. Y.

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John R. St., Detroit 3, Mich. The catalog includes a selected cross-section of the complete line of dressing tools available, including single-point, multiple-cluster, radius, multiple-edge, multiple-layer, impregnated-diamond, cone-point and thread grinder dressers.

**21. Press Brakes.** Excelsior Tool & Machine Co., Dept. MB, 31st and Ridge Ave., East St. Louis, Ill., has literature available describing and illustrating

their line of all steel press brakes with 15 through 200 ton capacities. Standard throat dimensions are given along with standard equipment and optional features available. Also described are standard forming dies.

**22. Tapping and Drilling Heads.** Said to handle over a million different hole combinations, these multiple tapping and drilling heads, either circle or straight-line types are described and

**For a complete line  
of precision feeds**

# **"RFC" Roll Feeds**

#### **FITS ANY PRESS**

For side or rear feeding. All attachments for installing furnished, including disc and connecting linkage.

#### **CAN'T SLIP**

Each wedge has four points of contact to safeguard accuracy.

#### **REVERSES INSTANTLY**

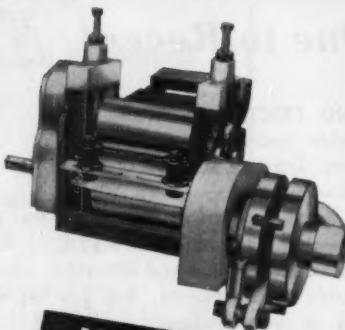
Merely shift feed finger spring from one lug to the other.

#### **FEEDS IN THOUSANDTHS**

Amazingly accurate stock movement assured.

#### **MAINTAINS ORIGINAL SETTING**

Regardless of use or wear. No ratchets or pawls to wear down and "Throw off" feed spacing.



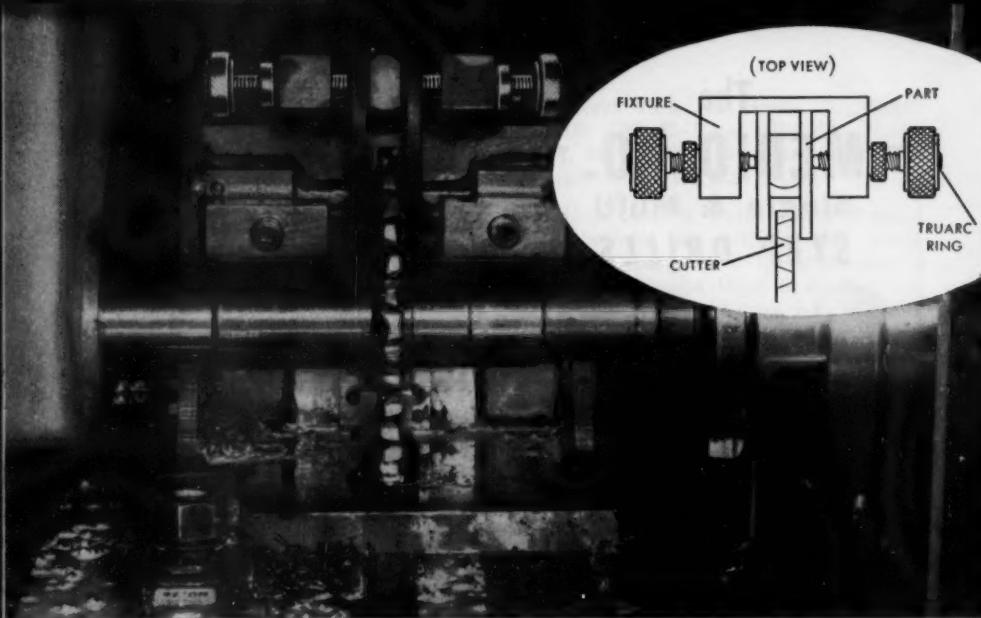
**READY FOR MOUNTING  
FURNISHED COMPLETE**  
Early delivery on  
Standard Models  
Write today for latest Bulletin.



**Roll Feeds Corp.**  
ASHTON, R. I.

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MACHINE and TOOL BLUE BOOK



...at North American Aviation, Inc., Los Angeles Division:

## Vlier Torque Thumb Screws eliminate guesswork when supporting parts against drill or mill thrust

**Prevent inaccurate machining which  
always occurs when work is not  
properly supported...**

Vlier Torque Thumb Screws are simple, precision tools. They provide an accurate means of holding or supporting a part with a predetermined amount of end pressure. When used beneath or behind cutters as a positive support, they eliminate chatter, vibration and prevent deflection of the part which would result in loss of size. *Even fragile, thin-walled parts can be held securely against machining pressures without distortion.*

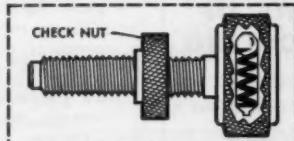
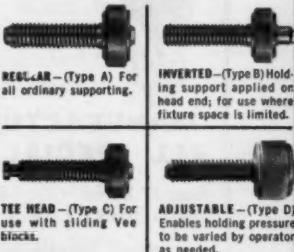
**Impossible to overtighten...** The head of the Vlier Torque Thumb Screw is designed with an accurate, spring-controlled ball-check which functions automatically. When the predetermined supporting pressure is reached, the head rotates freely, preventing overtightening of the screw. Spring pressures are determined at the factory and

accuracy is guaranteed for the life of the tool. A knurled lock-nut prevents loosening of the screw due to chatter or vibration. Backing off action is positive at all times.

**Built to last a lifetime...** Design of Vlier Torque Thumb Screws is extremely simple. There is nothing to wear out; nothing to jam; nothing to get out of adjustment. By removing a Truarc ring the head can be taken apart for cleaning. Cover plates protect mov-

ing parts from dust, chips, etc., assuring years of profitable use. Order a supply of these money-savers from your Vlier distributor today.

**Available in four types; 19 models**



*In the Vlier Torque Thumb Screw spring pressure is applied perpendicular to screw axis, eliminating inaccuracies due to wobble or "stop" as wear occurs.*

### Other Vlier Tooling Specialties



Spring  
Plungers

Spring  
Stops

Toggle  
Pad

Fixture  
Keys

Swivel-Pad  
Clamp

Stocked in principal industrial areas in U.S. and Canada

**Write for your  
free copy of the new  
1955 Vlier Catalog**



**VLIER** ENGINEERING  
INCORPORATED

8900 Santa Monica Blvd., Los Angeles 46, California

The  
**MEDIO CO.**  
 Single & Multi  
 STEP DRILLS



CONCENTRIC



NOT  
UNDERCUT



RELIEVED  
RADIALLY

**MANUFACTURERS OF  
ALL SPECIAL TOOLING**

Step C' bores  
Form Cutters  
Form Tools

Form Cutters  
A-N Spec. (C' bores)

Rapid Service on All Orders

**The MEDIO Co.**  
147 GRAND ST. New York 13, N.Y.  
WO 6-1022

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**Plant lighting differs**

...to maintain machine  
capacity install

**VIMCO** *Lights*

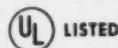


Vimcolights put non-glare light right on the work area . . . removing shadows caused by normal plant lighting. Slow downs, rejects and accidents are fewer. Production is better.

Six standard models. Special models for OEM use.



Vimcolights are



Write today.

**VIMCO MFG. CO., Inc.**

Since 1919

109 BRAYTON STREET • BUFFALO 13, N.Y.

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illustrated in literature available from Etco Tool Co., Inc., Dept. B, 594 Johnson Ave., Brooklyn 37, N. Y. Interchangeable components are included along with working capacities, dimensions and weights.

**23. Pumps.** The new PF-100 Dudco dual-vane hydraulic pumps and the PF-100 series double pumps with valve panels are described and illustrated in literature available from the Dudco Div.,

The New York Air Brake Co., Dept. MTBB, 1700 E. Nine Mile Rd., Hazel Park, Mich. Dimensions and operating characteristics are also given.

**24. Steel Drawer Units.** Steel drawer combinations for medium and small parts are discussed in literature available from Equipto, Dept. B, Aurora, Ill. Also included are lockers, benches and office equipment along with illustrations of their complete line of drawer

**You are missing a bet!**  
**Use U. S. DRILL HEADS**  
**with Turret Lathes . . .**



**Manufacturers of all types of fixed center and individual lead screw tapping heads.**

**U.S. HEADS**  
SINCE 1915

**UNITED STATES DRILL HEAD CO.**  
616-618 Burns Street, Cincinnati 4, Ohio

and storage equipment and prices on all products.

**25. Diamond Abrasives.** Advantages of diamond abrasive over silicon carbides both for rough grinding and in final polishing are featured in a new pamphlet prepared by the abrasives division of Elgin National Watch Co., Dept. MB, Elgin, Ill. Entitled "Metallographic Polish With Diamond" the pamphlet is said to have particular application to

specimen polishing of metallic carbides and other metals.

**26. Flexible Shafts.** Circular 247, "Flexible Shafting in Action for Economical Power Transmission" has just been released by Elliott Mfg. Co., Dept. MTB, 350 State St., Binghamton, N.Y. Flexible shafting is said to give ideal power transmission for machines driven by portable power units; machines where alignment of drive shafts and mitre

## THE MAC-IT LINE OF ALLOY STEEL SCREWS



Here's a better source  
for socket screws!

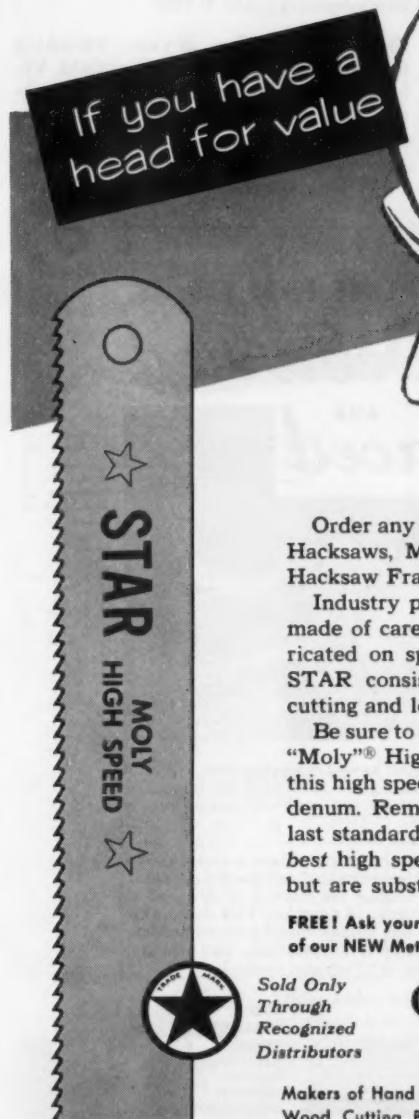
Take the gamble out of fastening—  
rely on Mac-it Socket Head Cap Screws  
and Hollow Set Screws!  
Mac-it Socket Screws have:  
• High-grade alloy steel  
• Heat treated for extra strength  
• Accurate dimensions • Class 3 fit  
Your local Mac-it distributor stocks  
all standard sizes and can handle  
your "special" problems quickly.

Mac-it Screw Division  
STRONG, CARLISLE & HAMMOND COMPANY  
CLEVELAND 13, OHIO

Mfd. by Mac-it Parts Co., Lancaster, Pa.

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MACHINE and TOOL BLUE BOOK



Order any of the full line of STAR Hand and Power Hacksaws, Metal and Wood Cutting Bandsaws and Hacksaw Frames from your Industrial Distributor.

Industry prefers STAR quality, prefers the blades made of carefully heat-treated, top-quality steel, fabricated on specially designed equipment — because STAR consistently delivers fast, economical metal cutting and long blade life.

Be sure to ask your Industrial Distributor for STAR "Moly"® High Speed Steel Blades. STAR developed this high speed, heavily-alloyed steel blade of molybdenum. Remember, "Moly" High Speed blades outlast standard steel blades 10 to 1, cut as well as the best high speed steel blades made, but are substantially lower in cost.

**FREE!** Ask your Industrial Distributor for a supply of our NEW Metal Cutting Booklets and Wall Charts

*Sold Only  
Through  
Recognized  
Distributors*

**CLEMSON**  
**CLEMSON BROS., INC.**  
**MIDDLETOWN, N. Y., U. S. A.**



© 1887

Makers of Hand and Power Hacksaw Blades, Frames, Metal and Wood Cutting Band Saw Blades and Clemson Lawn Mowers.

Encircle No. 416 on Card, Opposite Page 65

gears are a problem; where driven unit is constantly moving; and where vibration is present in driven unit.

**27. Rolling Mills.** The Fenn Mfg. Co., Dept. MB, 121 Fenn Rd., Newington, Conn., has available a bulletin titled "Modern Rolling Mills Aid Study of High Strength Materials." It discusses the special requirements of rolling mills for laboratory use, describes how heavier, sturdier mills offer greater

control, increased flexibility and improved instrumentation, in order to duplicate production line conditions in the laboratory.

**28. Grinders.** The Bryant Chucking Grinder Co., Dept. MB, Springfield, Vt., is offering a folder describing the various financing plans available to purchasers of internal grinders and precision boring machines. It covers both short and long term conditional sales

**1200**  
**3/4" TUBE ENDS PER HR.**  
*Deburred  
AND  
Faced*  
**ON PINES  
END-FINISHING  
MACHINE**

At Tube Processing, Inc., Indianapolis, the Pines No. 600 End-Finishing Machine, illustrated at right, is today performing combination facing and inside and outside deburring operations on  $3/4" \times .035"$   $\times 15"$  steel tubes at average net production rates of 1200 tube ends per hour. On smaller jobs,  $1/4"$  and  $3/16"$  steel tubes, net production averages up to 2000 ends per hour. The machine is equipped with air-operated clamp and foot pedal control.



**Fast, Accurate Work**

These outstanding performance records are typical of fast, accurate results achieved in other plants on all kinds of deburring, facing, chamfering, pointing, and reaming operations. This is because the machine is designed to clamp and feed work to the rotating cutters in one pass. This enables the operator to work more efficiently with less fatigue. Small and compact, the Pines No. 600 handles stock diameters up to 2". Maximum feed stroke is  $1-1/4"$ . Larger models for stock sizes up to 5" are also available.

**PINES** ENGINEERING CO., INC.  
Specialists in Tube Fabricating Machinery 498 WALNUT • AURORA, ILLINOIS  
PRODUCTION ENDING • DEBURRING • CHAMFERING MACHINERY

**FREE  
BULLETIN**  
Write for  
facts on  
how these  
machines  
cut production costs.



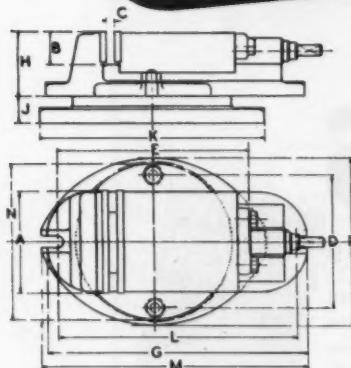
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MACHINE and TOOL BLUE BOOK

**Gives you dependable accuracy!**

**ABWOOD**  
PRECISION  
**Machine Vise**

... with the sliding  
jaw that can't lift  
and tilt the job!



- Its sliding jaw runs on "Vee" slides, is fitted with adjustment for wear and has long bearing surfaces.
- Totally enclosed hardened square thread screw can't become seized or bruised.
- Sliding jaw machined over whole surface for use of scribing block.
- Accurately machine divided swivel bases indexed fully through 360°.
- Large capacity, powerful grip, sturdy construction and high quality finish.
- No traps for swarf.
- Low height with rigidity.
- Bases drilled and reamed for insertion of tenon buttons at right angles to vise jaws.
- Crank handle supplied.

**SWIVEL VISES** All parts interchangeable

Size of Vise	A	B	C	E	F	H	J	K	M	Price
3"	3 $\frac{3}{16}$ "	1 $\frac{5}{8}$ "	2"	6 $\frac{1}{4}$ "	5 $\frac{3}{4}$ "	3 $\frac{7}{16}$ "	1 $\frac{1}{8}$ "	7 $\frac{1}{4}$ "	9 $\frac{1}{2}$ "	\$ 40.00
4"	4 $\frac{1}{16}$ "	1 $\frac{5}{8}$ "	2 $\frac{3}{4}$ "	8"	6 $\frac{1}{4}$ "	3 $\frac{1}{16}$ "	1 $\frac{1}{8}$ "	9 $\frac{1}{2}$ "	11 $\frac{1}{2}$ "	65.00
6 $\frac{1}{2}$ "	6 $\frac{3}{16}$ "	1 $\frac{7}{8}$ "	6 $\frac{1}{2}$ "	11 $\frac{1}{4}$ "	10 $\frac{1}{2}$ "	3 $\frac{3}{16}$ "	1 $\frac{5}{8}$ "	13 $\frac{3}{4}$ "	17 $\frac{3}{4}$ "	125.00
8"	8 $\frac{1}{16}$ "	2"	8"	13 $\frac{1}{4}$ "	12 $\frac{1}{2}$ "	3 $\frac{1}{2}$ "	1 $\frac{1}{8}$ "	15 $\frac{1}{2}$ "	22"	165.00
12"	12 $\frac{1}{4}$ "	2 $\frac{5}{8}$ "	12"	14 $\frac{1}{4}$ "	14 $\frac{1}{2}$ "	5 $\frac{1}{8}$ "	1 $\frac{7}{8}$ "	17"	24 $\frac{1}{8}$ "	275.00

Order today or write for further  
information to Dept. B-1

**DeWitt**

**DE WITT EQUIPMENT CORPORATION**  
190 ELIZABETH AVE., NEWARK 8, N. J.

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plans, equipment eligible, down payment, installments and finance charges.

**29. Alloys and Fluxes.** A new pocket size 32-page book has been published by All-State Welding Alloys Co., Inc., Dept. BB, 249-55 Ferris Ave., White Plains, N.Y. Data is condensed to assist buyers of specialty alloys and fluxes. The book is entitled "Buyers Guide to the Complete Line of All-State Alloys and Fluxes."

**30. Presses.** Literature is available from the Ferracute Machine Co., Dept. MTBB, Bridgeton, N.J., describing and illustrating their line of punching presses, both standard throat and deep-throated models; O.B.I. presses and double crank straight side presses. Complete descriptions, along with standard equipment and specifications are included.

**31. Clutches.** New small clutches; large bore clutches; clutch-coupling unit;

# GET THE FACTS

## About Hardness Testing

Everything you need to know about hardness testing is told in this handsome book, prepared by the makers of the internationally respected CLARK Hardness Testers for "Rockwell Testing." Simple, easy-to-read text (in English) and numerous illustrations show the equipment and procedure for fast, accurate hardness testing of ferrous and non-ferrous materials. If you would like a copy, *free of charge*, just attach this ad to your letterhead or write "Send book." A copy will be mailed to you promptly.



P.S. If you are interested in descriptions and prices for CLARK Hardness Testers (Standard and Superficial) of *guaranteed accuracy*, say the word and we'll gladly supply them.

**CLARK**  
INSTRUMENT COMPANY

**CLARK INSTRUMENT INC.**

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MACHINE and TOOL BLUE BOOK

series 50 clutches, along with the all purpose ball bearing clutch; plain bearing clutch; and the special purpose ball bearing clutch are all described in literature available from Formspag Co., Dept. MB, 23601 Hoover Rd., Van Dyke, Mich. Advanced design principles are said to make possible more torque capacity for size and weight.

**32. Aluminum Alloys.** Peter A. Frasse & Co., Dept. B, 17 Grand St., New York

13, N.Y., has recently completed a new brochure which describes the commercial aluminum alloys. The brochure explains in detail the general properties, fabricating characteristics, typical applications, and available size ranges of each alloy. Also included are alloy designation, weight comparison, and temper designation charts.

**33. Index Tables.** Standard precision index tables for high speed production are

**WORLD'S HARDEST METAL**

**IMPROVED QUALITY**

Additional refinements and improvements in our process have added still longer life to the wearing edges of Talide tools, dies and wear resistant parts. The result is a carbide having a new, unique grain structure with harder and tougher properties than previous grades. Laboratory tests reveal our improved grades possess 25% greater strength and rigidity. Service life per grind up to 50% longer than previous grades has been proven in grueling field tests.

METAL CARBIDES CORP.,  
YOUNGSTOWN 7, OHIO

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**METAL CARBIDES CORPORATION**  
**TALIDE®**  
YOUNGSTOWN 7, OHIO

HOT PRESSED AND SINTERED CARBIDES - VACUUM METALS  
HEAVY METAL - CERMETS - HIGH TEMPERATURE ALLOYS  
OVER 25 YEARS' EXPERIENCE IN TUNGSTEN CARBIDE METALLURGY

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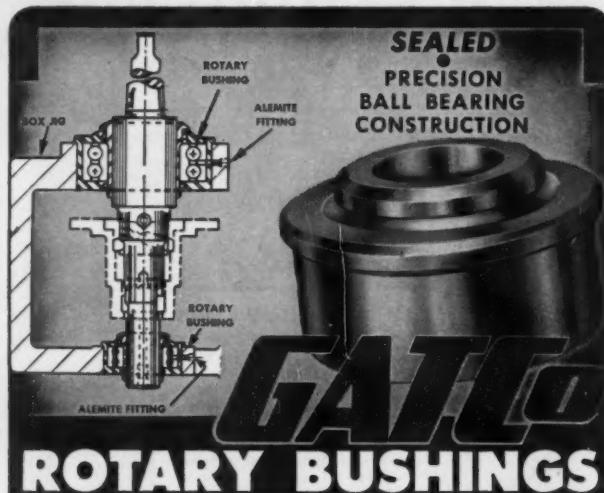
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described and illustrated in catalog No. 300 released by Ferguson Machine & Tool Co., Inc., Dept. MT, St. Louis 21, Mo. The Ferguson Intermittor index table is claimed to give up to 500 indexes per minute with 20,000 hours of operation without maintenance. Applications and accessories available are also included.

**34. Universal Joint and Drive Shaft.**  
Detroit Bevel Gear Co., Dept. B, 8130 Jos. Campau, Detroit 11, Mich., has an-

nounced the availability of a new Almetal universal joint and drive shaft brochure. It discusses the advantages of the company's line of needle bearing universal joints and shows design principles. Applications and specifications are included along with contract work information.

**35. The Story of Giddings & Lewis,**  
builders of horizontal boring, drilling and milling machines, planers, planer-type milling machines, vertical boring



**FOR DRILLING, CORE DRILLING,  
ROUGH AND FINISHED BORING**

The inner race of the GATCO bushing rotates with the tool, piloting the tool accurately below or above the work—or both.

Eliminates expensive tool construction—Reduces tool wear—Prevents seizure and pilot breakage—Especially adapted where precision is required.

*Write for full information and prices*

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42326 ANN ARBOR ROAD, U.S. 12, PLYMOUTH, MICH.  
Telephone PLYMOUTH 1472

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MACHINE and TOOL BLUE BOOK

mills, vertical lathes and a complete line of boring, turning and planing tools is told with illustrations in a new 44-page book published by Giddings & Lewis Machine Tool Co., Dept. BB, Fond du Lac, Wis. Established in 1859 the company has been in continuous operation ever since.

**36. Rotary Files.** A new 16-page rotary file catalog for hard and soft metals, plastics, wood and other materials has just been published by Grobet File

of America, Inc., Dept. TBM, 421 Canal St., New York 13, N.Y. Fully illustrated with all files shown actual size, it includes chisel cut, ground-from-the-solid and tungsten carbide rotary files as well as countersinks and rasps in a wide range of sizes, shapes and cuts.

**37. Pumping Units.** Literature is available describing and illustrating the line of pumping units, coolant systems, coolant pumps and accessories manufactured by Graymills Corp., Dept. MB,

**"a lot of machine for the  
money—we even  
jig bore with it"**



That's the kind of thing you hear  
about the Axelson milling machine.  
A lot of Axelson vertical and Universal

mills are in die shops and job machine  
shops where the close relation between  
machine operation and profits is very  
apparent to management. From these  
people we hear the word, the  
Axelson is a money maker.



Write for catalogs  
on Axelson Duplex  
and Vertical Mills



**AXELSON**  
MILLING MACHINES  
*make men hours mean more*

Producers of the World Famous Axelson Lathe

**AXELSON MANUFACTURING COMPANY**  
DIVISION OF U. S. INDUSTRIES, INC.  
6160 S. BOYLE AVENUE • LOS ANGELES 58, CALIFORNIA

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3705 N. Lincoln Ave., Chicago 13, Ill. Suggestions on how to select the right unit are included along with specifications and applications.

**38. Engravers.** Green Instrument Co., Dept. B, 385 Putnam Ave., Cambridge, Mass., has literature available on their line of pantograph engravers, panel engravers, cutter grinders, drum engraving fixtures, radial engravers, rotary tables and the Greenarc electric etcher.

The Green company's customer marking service will recommend devices and fixtures to speed production.

**39. Universal Joints.** Rzeppa constant velocity universal joints are said to have countless applications in industrial machines, aviation, and vehicular equipment with true constant rotating motion at severe angles. Both the bell type and disc type are claimed to give constant velocity, highest angularity, highest

**TORIT**  
**UNITIZED**  
**DUST**  
**CONTROL**

**Torit Unitized Dust Control** means each machine has its own custom-tailored dust collector designed to work specifically for that machine. There is no guess work, or average suction. Furthermore, dust control is provided only when that machine is running . . . there is no waste of power such as you have with centralized control when only a few machines are operating. This means better dust control at lesser operating cost and less initial installation cost. Get the facts now on how Torit will work better to . . . "CLEAR THE AIR".

See our catalog in Sweet's Machine Tool File, or write:

**TORIT MANUFACTURING CO.**  
303 WALNUT STREET • ST. PAUL 2, MINN.



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MACHINE and TOOL BLUE BOOK

capacity, compactness and long life. The Gear Grinding Machine Co., Dept. TBM, 3901 Christopher, Detroit 11, Mich.

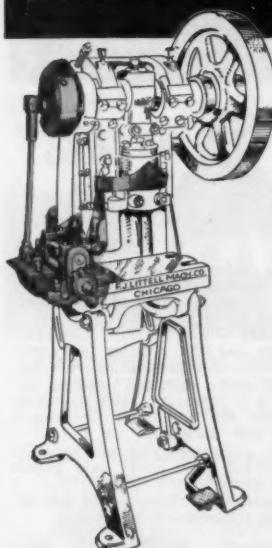
**40. Lathes and Millers.** A 20-page illustrated catalog describing the entire line of Swedish build Koping lathes and milling machines, as well as a pictorial description of the factory in Sweden and background information on the 97 year old firm is available from Homestrand, Inc., Dept. B, 9 Addison St., Larchmont, N.Y., exclusive U.S. agents.

**41. Clamps.** Literature is available on the new line of streamlined, high tensile, self-contained, rapid, positive toolroom clamp. They offer a clamping range from  $\frac{1}{8}$ " to  $18\frac{1}{2}$ ". Serrated adjustment feature prevents thread stripping, thus eliminating bolt replacement. Adaptable for milling machines, boring machines, planers, drill presses, punch presses, angle plates and also layout and inspection work. Hi-Lo Tool Products Co., Inc., Dept. BB, 18525 Weaver Ave., Detroit 28, Mich.

*Automation in Action . . .*

## LITTELL Style "M" ROLL FEED

Makes Any Punch Press Fully Automatic—  
and 3 Ways Better



• **FASTER** . . . 9,000 stampings an hour at 200 strokes per minute, or 4500 stampings an hour at 100 strokes per minute are easy production rates on any press with Style "M" Roll Feed.

• **SAFER** . . . Automatic feeding with Style "M" Roll Feed keeps hands and fingers safe from costly accidents.

• **LOWER IN COST** . . . Faster, automatic production from low cost coil stock cuts cost per stamping. Greater safety gives your presses the lowest insurance rate.

The Style "M" Roll Feed is quickly and easily installed on any standard punch press. Several models are available—the largest feeds coil stock up to 8" wide and .055" thick. All models feed left to right, right to left or front to back. Feed direction is reversed by reversing the clutch. On large models, feed length per stroke is from 0 to  $4\frac{1}{4}$ " with standard gears, and from 0 to  $8\frac{1}{2}$ " with compound gears. Feeding rolls are hardened and ground for long service life. Style "M" puts automation in your press room at lowest possible cost.

**Write for the Littell Roll Feed Catalog**



ROLL FEEDS • DIAL FEEDS  
STRAIGHTENING MACHINES  
REELS • AIR BLAST VALVES  
District Office: Detroit, Cleveland

4147 N. RAVENSWOOD AVE., CHICAGO 13, ILL.

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**42. Tool and Snagging Grinder.** Hammond Machinery Builders, Dept. MTB, 1614 Douglas Ave., Kalamazoo, Mich., have released literature on their improved type of tool and snagging grinder. The improved No-Dust grinder incorporates a built-in dust collector, requiring the same floor space as a grinder without a self-contained unit. They are available in three sizes of 1, 2 and 3 hp motors using 10", 12" and 14" diameter grinding wheels.

**43. Panto Miller.** "3-Dimensional Panto-Miller" is a 6-page, 2-color brochure by Johnson & Bassett, Inc., Dept. MTBB, Worcester, Mass. It describes, illustrates, and gives engineering specifications for the model 3-A Panto-Miller, a tracer-controlled production machine for 3-dimensional pantograph and milling work. It lists pantograph accessories available, and describes other J & B products.

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SEEING  
TOOLS  
EVER  
DESIGNED**

Direct Light  
Exactly as you  
want it

Also  
Available  
with  
one arm

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**LOCALITES**

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**MODEL 55-CX-701**

**NEW Universal Arm Joints** — Bend 135°. Large frictional triple disc bearing surface. Smooth, easy movement. Instantly adjustable by hand to direct light exactly as needed.

**NEW Collar Disc Joints** — Rotate 180°. Combination of 135° bend joints and 180° rotating joints provides amazing articulation for positioning reflector.

**NEW Reflector** — Bell shape with 6 1/4" orifice. Accommodates 100 watt A-21 lamp. Available with lens.

**NEW Base** — Universal for horizontal or vertical mounting. Outlet box base optional.

**NEW Wiring** — Keyless porcelain socket and separate toggle switch. 8 ft. SPT-2 18/2 heavy duty plastic rip cord with molded plug.

**NEW Finish** — Semi-gloss Vista Green baked enamel. Reflector interior, high temperature White.

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models for every  
industrial use.**



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CORPORATION • Fostoria, Ohio**

*Localites are available through  
wholesalers everywhere.*



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MACHINE and TOOL BLUE BOOK

**44. Cutting Fluids.** The distribution of three new brochures on cutting fluids is announced by the Cincinnati Milling Products Div., Dept. MTB, Cincinnati Milling Machine Co., Cincinnati 9, Ohio. Each of the following bulletins discusses the properties and applications of the specific solution: Cimcool—cutting fluid supplying means for heat control; Cimcool "CI"—a special concentrated solution with exceptional rust control; Cin-

cut Base Additive—a sulphur-chlorinated oil additive used as a general purpose cutting oil.

**45. Die-Draulic Grip.** Designed and perfected by "die men" the Barret Die-Draulic Grip manufactured by Die-Draulic Grip, Inc., Dept. BB, 528 Butterworth St., S.W., Grand Rapids, Mich., answers the problem of efficiently holding stock in position in a die during

**LESS  
REBOUND  
per pound**

thanks to

**"Contact Control!"**

**C/R Jawhead**  
the best "soft" hammer you can buy!

Special processing controls the rebound for longer striking contact. This means more work with fewer blows, less fatigue. Faces won't mar surfaces, slip, chip, fly off or change with extreme temperatures or use. Cost less, too, and last longer — are safer for work and worker.



• Available from  
your local indus-  
trial supplier.

CHANGE FACES IN SECONDS —  
Threaded collar locks them in.

**CHICAGO Rawhide MFG.CO.**  
1301 Elston Ave., Chicago 22, Ill.  
In Canada: Super Oil Seal Mfg. Co., Ltd.,  
Hamilton, Ontario

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drawing or forming. Five steps to determine your requirements are outlined in an accompanying circular.

**46. Reference Books.** South Bend Lathe Works, Dept. BB, 425 E. Madison St., South Bend 22, Ind., has announced the publication of two books, "Machine Shop Projects," and "How to Run a Lathe." "Machine Shop Projects" sells for \$2.00 a copy and "How to Run a Lathe" which is a valuable source of

reference for the skilled machinist sells for 50c.

**47. Carbide Tools and Blanks** in premium grades 548 and 434 are listed in an 8-page price and specifications booklet No. 355P. A unique guide for the selection of steel cutting grades is a feature of this booklet which describes Adamas premium carbide grades. Adamas Carbide Corp., Dept. D-18, 130 Market St., Kenilworth, N.J.

## BY-PASS TROUBLE!

...with Norton  
Mounted  
Wheels  
and Points



You save time and money when Norton mounted wheels and points chart your "Touch of Gold" Route to hard-to-reach grinding spots.

They're trued on their own spindles, for perfect concentricity; sharpness and fast-cutting action; and accuracy of dimensions and shape . . . They stay TIGHT on their spindles, under severest use . . . They're positively duplicated, for consistent top performance, thanks to Norton's statistical quality control . . . They're a 100% complete line, nearly 200 shapes and sizes in all required abrasives and bonds.

See your Norton Distributor or write direct to NORTON COMPANY, Worcester 6, Mass., Distributors in all industrial areas. Export: Norton Behr-Manning Overseas Incorporated, Worcester 6, Mass.

*Making better products...to make your products better*



W-1654

*and its BEHR-MANNING division*

NORTON COMPANY: Abrasives • Grinding Wheels • Grinding Machines • Refractories

BEHR-MANNING DIVISION: Coated Abrasives • Sharpening Stones • Pressure Sensitive Tapes

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MACHINE and TOOL BLUE BOOK

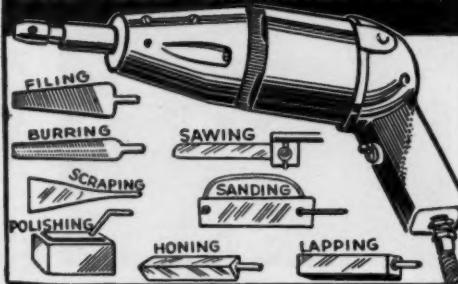
# B-R-E-A-K . . . Hand Finishing Bottlenecks

WITH  
PORTABLE • ELECTRIC  
RECIPROCATING TOOLS

These handy tools will cut out many tedious hand filing and finishing operations — Increase Production — Produce Uniform Work.

Light in weight — Delivers  $\frac{1}{8}$ " or  $\frac{3}{16}$ " fixed stroke at 1000 strokes per minute — Operates on 110 volts AC or DC.

ONE TOOL - UNLIMITED USES



**ACME TOOL COMPANY**  
71 WEST BROADWAY NEW YORK 7, N. Y.

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Write for  
Catalog.

Send parts  
for free  
grooving and  
production  
estimate



*Fischer . . .*  
**OIL GROOVERS**

The FISCHER No. 1 Oil Groover cuts a wide variety of grooves in bearings up to 8" in length and up to 5" inside diameter. A few simple settings permit you to cut continuous, relieved, straight or spiral grooves at any angle from parallel to perpendicular to the work. Grooves may also be cut in shafts, housings, etc.



This machine will slash grooving time and deliver continuous profitable production in your shop. It will pay to find out what it can do on your grooving jobs.

ESTABLISHED 1900

**FISCHER MACHINE CO.**

ELEVENTH and WOOD STREETS — PHILADELPHIA 7, PA.

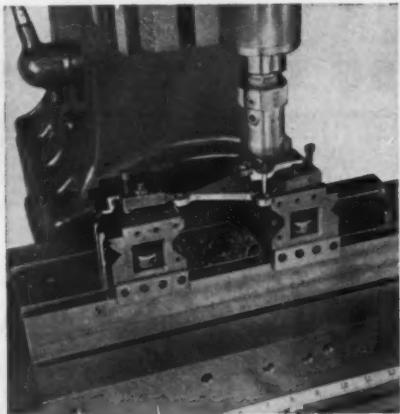
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## USE THE CAPACITY FOR WHICH YOUR MACHINE IS DESIGNED

### A Solution to Your Work-Holding Problems



• THE HANSON HOLDING FIXTURE is adaptable to Jig Borers, Jig Grinders, Vertical Mills, Duplicators etc. This fixture is permanently square and in-line with the ways of the machine. Therefore, its accuracy is unsurpassed in its application to Work Holding.

It need not be removed. To accommodate various jobs, simply loosen the Sliding Blocks and re-space to the size required. Due to the precision, the Sliding Blocks are instantly re-located at any time.

It effects great savings in set up time as the Work Piece is aligned by the fixture, thereby eliminating the otherwise necessary indicating for squareness. Duplicate Pieces can be machined with the same accuracy as the original without duplicating the set-up time.

THE HANSON HOLDING FIXTURE eliminates distortion of the Work Piece due to its unique method of holding.

**HANSON & COMPANY**

6527 RUSSELL ST.



DETROIT 11, MICHIGAN

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**PRECISION  
STARTS HERE:**

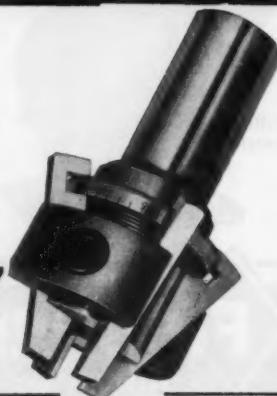
**KUTMORE**  
ADJUSTABLE  
HOLLOW MILLS

- Any COMBINATION of . . . Turning . . . Tapering . . . Facing . . . Chamfering . . . Trepanning in ONE PASS.
- Exclusive MICROMETER Adjustment Feature For Rapid Set-Up.
- Area Sales engineers for your immediate Problems.

Write for Catalogue No. 20 MT

**CARL WIRTH & SON, INC.**

1625 CLINTON AVE. NO.  
ROCHESTER 5, N. Y.



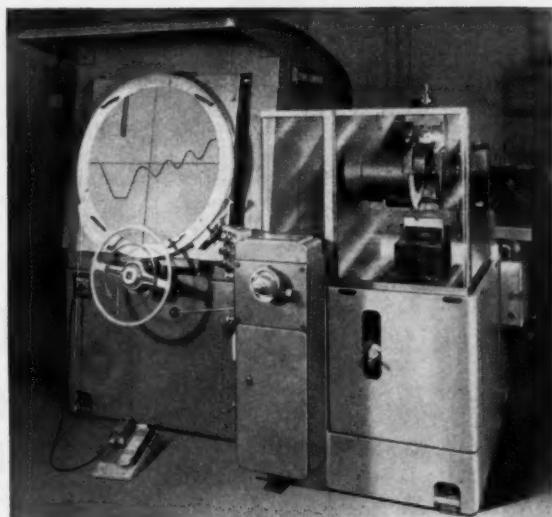
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MACHINE and TOOL BLUE BOOK

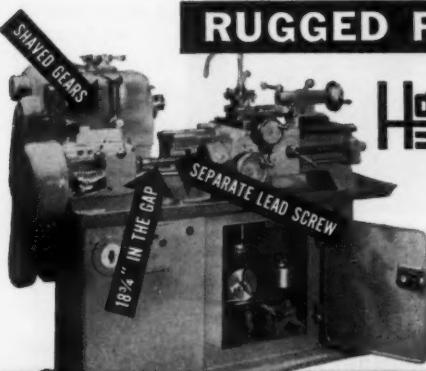
## Optical Contour Grinder

Surface grinder with hydraulic tracer control coupled with 30" screen comparator will produce profile ground shapes directly from a line drawing as well as duplicate finished ground profiles by automatic tracer control.

Features: 30" diameter screen with precision optical projection system; projected image is always in focus; optical system removed and protected from grinding area; 3 quick change precision lens systems 5X (6" dia.), 10X (3" dia.) and 20X (1½" dia.); length and speed of work table stroke ad-



## RUGGED PRECISION LATHE



### Harrison 11" GAP-BED GEARED HEAD PRECISION LATHE

- 24" between centers (also available in 40" centers)
- 11¾" swing over ways • 4½" x 18¾" swing in gap
- 1¼" collet capacity • Pre-loaded Timken bearings
- Threaded or American taper spindle too • Clutch & brake

With 2 H.P. motor, controls, steady and follow rests, face plate, driver plate, cabinet base and chip pan

**AMAZING LOW PRICE F.O.B. N.Y.C. \$1495.**

Made by T. S. Harrison and Sons Ltd., one of England's foremost manufacturers of fine machine tools. Send for catalog and price list.



Also 15" swing lathe with outstanding features, including spindle bored to pass 3" diameter bar.

ACCESSORIES AND PARTS MAINTAINED BY  
U.S. REPRESENTATIVE • Stanley Sheppard • 30 CHURCH ST., N.Y.C.  
AVAILABLE THROUGH YOUR DISTRIBUTOR

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justable; single handwheel image control during automatic lateral grinding wheel feed and continuous table reciprocation.

An outline chart showing the enlarged contour of the desired work piece is mounted on the comparator screen. An equally enlarged image, representing the cross section form of the grinding wheel cutting edge, is projected on the screen. As the grinding

wheel position is changed with respect to the work table, the projected image moves in the same direction and in a distance proportional to its enlarged size.

The image is the projection of an auxiliary stylus located in the focal plane of the lens system. Its cross section is identical with that of the grinding wheel cutting edge. Since it is mounted on the same member as the grinding wheel its

## Pair of Profitmakers...

these SCHAUER  
SPEED LATHES



Polishing conical brass adapter with  
Schauer Type NAO Speed Lathe.

These versatile, low-cost machines handle an almost unlimited variety of work—deburring, lapping, filing, trimming, polishing, etc. Thousands in use, *profitably!* Many sizes and models with holding devices to suit the job. *Speed your production* with Schauer Speed Lathes. Write for Catalog No. 530.

**SCHAUER MANUFACTURING CORP.**

4502 Alpine Ave. • Cincinnati 36, Ohio

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MACHINE and TOOL BLUE BOOK

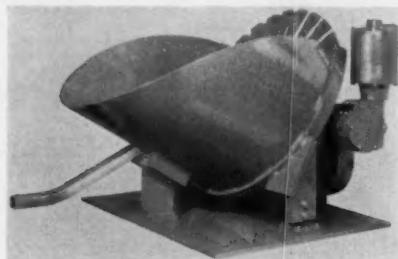
movement is directly derived from that of the grinding wheel.

Controls permit the operator to advance the grinding wheel along a given work contour. The projected image, representing the cutting edge, is simply made to follow the outline chart mounted on the comparator screen. The grinding wheel can also be template controlled by master stylus and hydraulic tracer. Work first produced by manual and comparator control can in turn be reproduced in quantity by automatic tracer control. Jones and Lamson Machine Co., Dept. B, Springfield, Vt.

Use ACTION Card, opposite page 64. Encircle No. 36

#### Barrel feeder features stationary ring cover

A barrel feeder featuring a stationary ring cover is designed for heavy-duty, large production runs. It is a new development based on the rotary principle, and is claimed to provide increased holding capacity and minimize the tumbling of pieces. Because of its open face

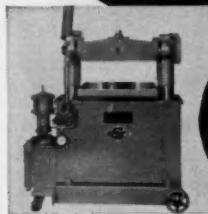


design, the hopper can be loaded easily by means of conveyor, elevator, etc. The cover remains stationary and the parts lie dormant except at the bottom where the collector ring rotates through. Unit is furnished in 24" and 30" diameters. Detroit Power Screwdriver Co., Dept. JS, 2801 W. Fort St., Detroit 16, Mich.

Use ACTION Card, opposite page 64. Encircle No. 37

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## NOW AIRDRAULIC HYDRAULIC MECHANICAL Die Tryout Presses

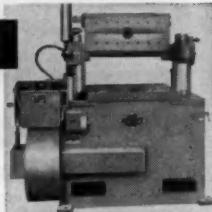


Airdraulic  
or  
Hydraulic

Available in 50 or 75 ton

#### Mechanical

Two post press  
50, 75 or 100  
ton. Four post  
press 100, 150  
or 200 tons.



**ALPHA PRESSES PAY FOR THEMSELVES** in a comparatively short time because they reduce die tryout and finish time by as much as 75%. How? By permitting both die members to be barbered, sheared, fitted and finished without removal of either member from press.

**ALPHA**  
**PRESS & MACHINE, INC.**  
9281 Freeland Ave., Detroit, 28, Mich.

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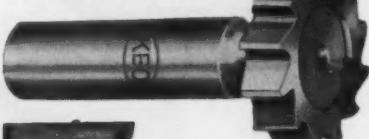
**KEO**

## CENTER DRILLS



Made of finest high speed steel. Available in all standard sizes. Always in stock for immediate delivery. Specials made to your specifications.

## KEYSEAT CUTTERS



High speed. Right hand  $\frac{1}{2}$ " shank. Diameter from  $\frac{1}{4}$ " to  $1\frac{1}{2}$ ". Standard sizes in stock for immediate delivery. Complete set - 41 sizes - available in sturdy, hardwood box. Saves time and money, because you always have the size you need.



## CENTER REAMERS

High speed steel. Reamers from  $\frac{1}{4}$ " to 1" regularly furnished with 60°, 82°, 90° included angle. Specials made for your specifications.

## LATHE MANDRELS



Precision made of tool steel, hardened and accurately ground. Tapered .0005" to the inch. Mandrels from  $8/16$ " to 1" are .0005" undersize at small end, from  $1-1/16$ " to 3", .001" undersize. Immediate delivery.

### Write for Literature

Illustrated literature and prices on all KEO Products mailed on request.

**KEO CUTTERS**  
19326 Woodward - Detroit 3 Mich.

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## PRECISION BORING

WITH

## MAXWELL MASTUR TOOLS



• Adjustable to 0.0002-inch, the new improved MASTUR boring tools feature precision, speed and long service life. New body and block construction permits these tools to take heavier cuts at higher speeds - to do more work in less time.

Adjusting-screw head is graduated into 50 divisions to provide readings in thousandths, and body is graduated to permit vernier readings of 0.0002-inch. The three models available have maximum boring bar capacities of  $1/2$ ,  $3/4$  and 1-inch and boring range from  $3/8$  to 15 inches.

DSB-MC

## THE MAXWELL COMPANY

220 BROADWAY

BEDFORD, OHIO

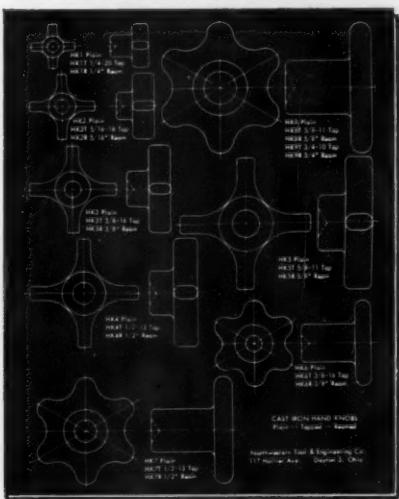
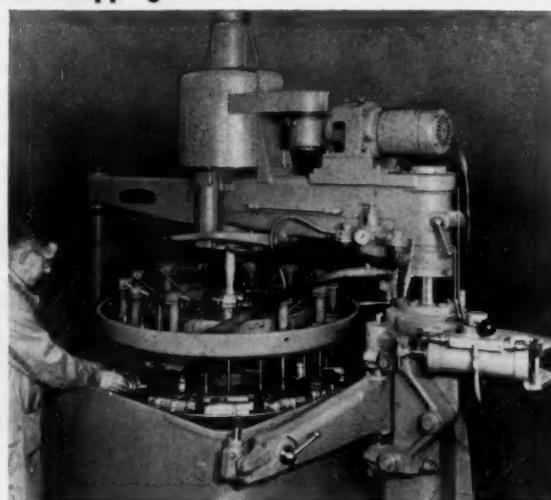
Encircle No. 436 on Card, Opposite Page 65  
MACHINE and TOOL BLUE BOOK

## High Production Machine Performs Single and Parallel Face Lapping

Norton Company's No. 48F Hyprolap high production lapping machine, for either single or parallel face flat lapping, can be arranged for a plain, timed cycle; automatic continuous feed; or semiautomatic continuous feed.

New features provide the means of handling a greater range in work-piece size at a more productive rate and with less operator attention than was previously available. They also provide better means of sizing control.

For single face lapping the machine mounts a



**T-NUT & STUD SETS  
STEP BLOCK SETS  
PUNCH PRESS SETS**

*Free! Tracing Template*  
**334  
FULL SCALE ITEMS**

QUARTER TURN SCREWS • SOCKET SHOULDER SCREWS • JIG FEET (three types) • FIXTURE KEYS (six sizes) • LATCH BOLTS (std. & long) SPHERICAL WASHERS • SPHERICAL FLANGED NUTS • STRAP CLAMPS (two types) • HARDENED NUTS & WASHERS • FLANGED NUTS N/C & N/F • CUT THREAD STUDS • TEE-NUTS (twelve sizes) • COUPLING NUTS • ADJUSTABLE STEP BLOCKS • STAR TYPE HAND KNOBS • HEXAGON TYPE HAND KNOBS • KNURELED HEAD SCREWS • TOGGLE SHOE CLAMPS • V-PADS

*Northwestern*  
118 HOLLIER AVE., DAYTON 3, OHIO

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November, 1955

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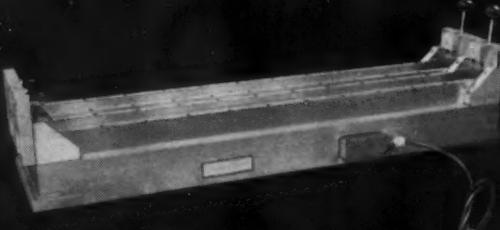
single 48" diameter bonded abrasive wheel lap on a heavy duty vertical spindle. Workpieces are retained in suitable adapters and proper lapping pressure secured through weights or pressure devices as required. Truth of the lap face is generated and maintained by a rugged column mounted diamond truing arm, operated hydraulically.

Opposed parallel flat faces can be lapped in this machine simultaneously.

For this operation a massive column and overarm arrangement is provided to support the upper 48" diameter lap. Workpieces are held in retainers between the two laps and sizing is controlled by raising the lower lap with the "click-count" indexing wheel feed arrangement and rotating full nut engaging a feed screw. Both hand and power feed are provided. Norton Co., Worcester 6, Mass.

Use ACTION Card, opposite page 64. Encircle No. 38

## *Walker Does It Again-*



1. Walker designs and builds intricate magnetic fixtures for the automotive and aircraft industries.
2. Accurate and positive holding assured.
3. Consult Walker Engineers for the solution of your holding problems.

**O. S. WALKER CO. Inc.**

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*Original Designers and Builders of Magnetic Chucks*

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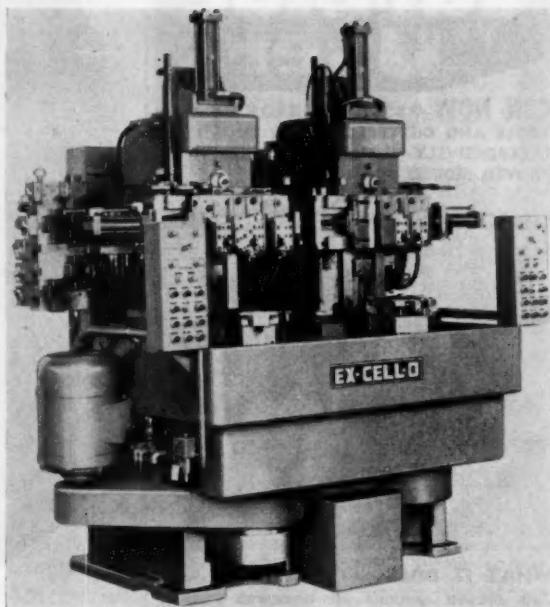
MACHINE and TOOL BLUE BOOK

## Vertical Borer Machines Two Different Parts at Once

The Style 432 vertical precision boring machine will perform such operations as turning, boring, facing, grooving and chamfering in combinations or as separate operations.

Each of two stations has a separate hydraulic system, counter-weighted compound tool slide, vertical spindle, drive equipment and controls. During the machining operations at one station the other station can be unloaded, loaded and started on its automatic cycle. Individual controls and power equipment at each station prevent the operation of one station affecting the other.

Vertical construction provides convenience in loading and unloading work and adjusting or changing tools. The spindle shafts are hollow to permit drawbar or pneumatic chuck operation. The desired machine cycles are ob-



tained by positioning selector switches, adjustable dogs and orifices. Ex-Cell-O Corp., Dept. JS, 1200 Oakman Blvd., Detroit 32, Mich.

Use ACTION Card, opposite page 64. Encircle No. 39

### Heavy duty contour projector

A heavy duty Kodak contour projector, Model 14-5, combines maximum table travel and a 14" screen. Large, heavy parts unsuited to projection on smaller equipment may be handled easily on the new model because of its large, heavy duty worktable which enables it to withstand greater weight without measurable deviation, the manufacturer reports.

This worktable assembly is supported by a 5" od column, located in widely spaced precision bearings. Deflection

is minimized by the use of outboard braces in the form of a heavy channel skirt.

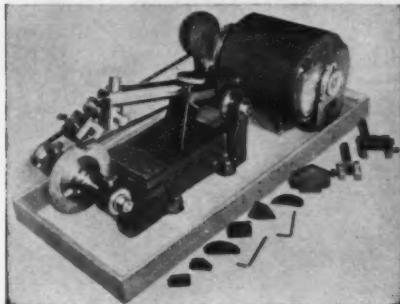
A full 17.5" throat clearance facilitates positioning large parts on the 26"x 8" worktable. Table travel of 8 inches is provided in both horizontal and vertical planes, and focusing travel is 3 inches.

Projector measures intricate parts to the order of .0001" or routes gaging by comparing the image of the part with a chart. A relay lens picks up the image of the part, directs it into projection

# Carbide Users

CAN NOW RESTORE BROKEN TOOLS AND CUTTERS QUICKLY AND INEXPENSIVELY WITH THE NEW IMPROVED MODEL NO. 300-A.

## UNION CUT-OFF MACHINE



### WHAT IT DOES:

Cuts broken sections off damaged carbide tools without grinding.  
Cuts standard carbide blanks to any desired size.  
Saves time-consuming grinding on carbide tools.  
Saves carbide tools that otherwise would be scrapped.  
Saves you money on costly diamond grinding wheels.  
Saves you money by making possible the purchase of large-size standard carbide blanks.  
Simple to operate and automatic in operation.

### SPECIFICATIONS and PRICE:

1/4 H.P. Motor, 1725 R.P.M., 110 Volt.  
Overall size 10"x21"x9" high. Supplied complete with diamond cut-off blade, universal double clamp and motor for \$295.00 F.O.B. Stamford, Conn.  
Clamps for special applications extra at \$7.50 each.

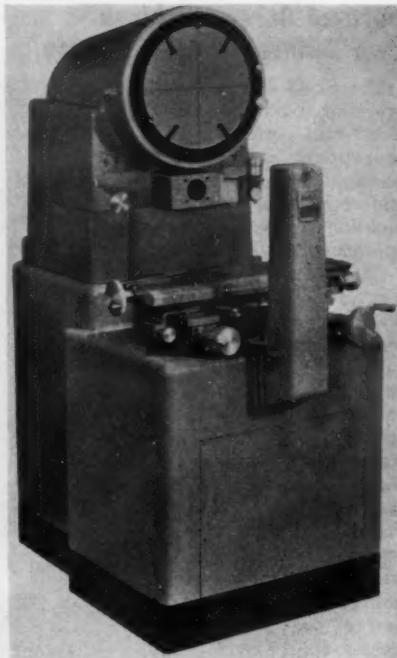
### LITERATURE ON REQUEST

# UNION

WIRE DIE CORP.  
71 W. 45TH ST., NEW YORK 36, N. Y.  
PLANT: STAMFORD, CONNECTICUT

Encircle No. 439 on Card, Opposite Page 65

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lens at the rear of the cabinet. When surface illumination is used, light is emitted through the relay lens, strikes the part, and is reflected back into the relay and thence through the optical system to the screen. Eastman Kodak Co., Dept. RH, Rochester 4, N.Y.

Use ACTION Card, opposite page 64. Encircle No. 40

### Countersink fits drills with chucks from 1/4"

The Stanley high speed countersink is of one-piece, solid-bar construction and will fit hand and power drills with 1/4" chucks or larger. It has a five-flute head machined at an 82 degree angle to seat wood and machine screws. Chatter is held at a minimum by clearance ground into the cutting edges. Stanley Tools Div., Stanley Works, Dept. BB, New Britain, Conn.

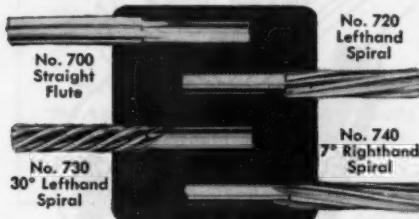
Use ACTION Card, opposite page 64. Encircle No. 41

MACHINE and TOOL BLUE BOOK

# SUPEREAM the only DECIMAL REAMER

with all Flutes ground Face  
and Back after heat treatment . . .  
preventing

Clogging or Freezing of chips for  
REMARKABLE SMOOTH REAMING



WHY BUY a decimal reamer as a special  
when you can buy a SUPEREAM decimal  
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livery!

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## GARBERDING FINGER STOPS



Made in uniform width to fit any stand-  
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November, 1955

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SCORING Lubricant can't be  
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295

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PRESS ROOM EQUIPMENT

WIRE STRAIGHTENERS

Takes round or flat wire and tubing. Rolls adjustable by means of socket set screw. For use with automatic Slide, Roll or Hitch Feeds. Units available with 5, 7, 9 or 11 grooved rolls.



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STOCK STRAIGHTENERS

For all thin materials. Entering rolls power driven; top rolls are individually adjustable for stock thickness. Available in eight sizes.



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A positive safety guard on power presses. Easily installed. Downward motion of ram removes operator's hands. Rugged—withstanding jarring impact of press. Needle bearings in guard housings assures long life.

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MACHINE and TOOL BLUE BOOK

# INCREASE PRODUCTION . . .



Above is shown a 6M Fen Automatic Wrench operating a 28" heavy duty chuck.

• • •  
For detailed information regarding the application of the Fen Automatic Wrench to your machines, phone, wire or write.

## ELIMINATE "WRENCH WRESTLING"

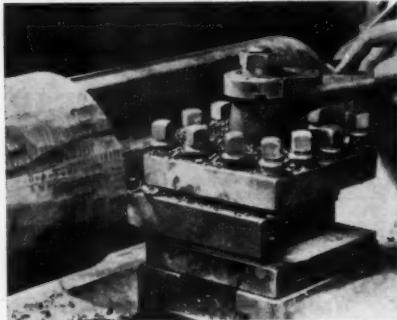
You can put the advantages of the Fen Automatic Wrenches to your work right in your own shop on machines already in operation, or specify them on your new standard or automatic machines.

**THE FEN  
MACHINE COMPANY  
28914 Lakeland Blvd.  
Wickliffe, Ohio**

Encircle No. 444 on Card, Opposite Page 65

## Carbide Grades Claim Greater Edge Wear

Steel cutting carbide Grades CA-606 and CA-609 were developed to give greater edge wear without loss of shock resistance.



Carmet steel cutting Grade CA-609 cutting 8½" forged tool steel bar, removing about ½" material with a four-foot cut across the bar. Speed is about 300 sippm, with a feed .0208" per revolution.

Grade 609 is designed for medium heavy machining where cuts are in excess of 1/16" and where the application requires more resistance to wear. The CA-606 has a high resistance to edge wear as well as greater resistance to heat, and is especially useful where machining tolerances must be held.

These grades are also made with the new anti-cratering ingredient called Crystalloy. Crystalloy uses titanium metal in place of titanium oxide to gain greater impact strength and get greater crater resistance. The new grades are available at regular prices in all standard tips and tools and can be made into any special blanks of any shape or size required. Carmet Div., Allegheny Ludlum Steel Corp., Dept. B, Ferndale, Mich.

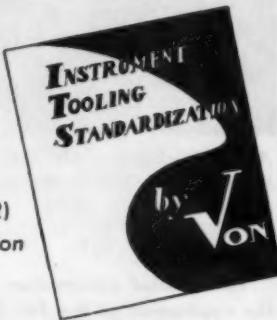
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# New!

## JIG AND FIXTURE COMPONENTS FOR INSTRUMENT TOOLING

- Shoulder Screws
- Knurled Swivel Nuts
- Jig Legs
- Thumb Nuts
- Clamps
- Thumb Screws (Sizes start at #4-40)
- Swivel Studs & Studs (Sizes start at #6-32)

All items are stainless steel and precision quality at no extra cost to you!



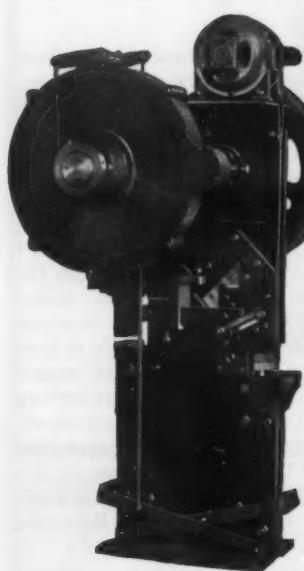
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**VON Industries, Inc.**

192 Hillside Ave.

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Beloit  
Equipment  
will cost  
you less  
and serve  
you better.

## Beloit COMBINATION PUNCH, BAR SHEAR, ANGLE SHEAR and NOTCHER

Here's the ideal equipment for shearing, mitering, notching and coping angles. This model also shears flat and round bars. Punches to the center of 10" without changing the set-up. Versatile. You'll find many jobs for this Beloit machine . . . and the savings will more than pay for it!!

Write for complete details.

**HENDLEY &  
WHITTEMORE CO.**  
100 Blackhawk Blvd.  
Beloit, Wis.

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MACHINE and TOOL BLUE BOOK

**SID TOOL  
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Your headquarters for Special  
Taps and Drills now stocks . . .

HIGH  
SPEED

**SPECIAL SIZE**

MILLING  
CUTTERS



**SIDE MILLING  
CUTTERS**

Precision made in U.S.A.

**IN STOCK FOR  
IMMEDIATE DELIVERY!**

DIAM- ETER	WIDTH OF FACE	SIZE OF HOLE	PRICE EACH
4	7/32	1	11.40
4	9/32	1	13.35
4	5/16	1	13.70
4	7/16	1	15.05
4	9/16	1	17.15
4	11/16	1	18.10
4	13/16	1	20.85
4	15/16	1	22.95
4	1	23.65	
4	1-1/8	1-1/4	25.75
4	1-1/4	1-1/4	28.35
5	1/4	1	17.50
5	5/16	1	17.80
5	3/8	1	19.70
5	7/16	1	20.85
5	9/16	1	23.55
5	11/16	1	26.30
5	13/16	1	28.35
5	7/8	1-1/4	30.50
5	15/16	1	31.50
6	1/4	1	21.60
6	5/16	1	22.10
6	3/8	1	23.70
6	7/16	1	25.30
6	9/16	1	31.20
6	11/16	1-1/4	33.45
6	13/16	1-1/4	35.75
6	7/8	1	36.65
6	15/16	1-1/4	38.50
8	1/4	1	47.70
8	5/16	1	49.70
8	3/8	1	51.05
8	7/16	1	53.70
8	1/2	1	54.55
8	9/16	1-1/4	56.65
8	5/8	1-1/4	57.50
8	11/16	1-1/4	59.35
8	13/16	1-1/4	60.50
8	7/8	1-1/4	62.20
8	15/16	1-1/4	63.85
10	1/4	1-1/2	67.65
10	5/16	1-1/2	68.90
10	3/8	1-1/2	83.75
10	1/2	1-1/2	92.30
10	5/8	1-1/2	105.35
10	3/4	1-1/2	121.50
10	7/8	1-1/2	131.95
10	1	1-1/2	136.70
12	1/2	1-1/2	153.95
12	5/8	1-1/2	169.75
12	3/4	1-1/2	174.35
12	7/8	1-1/2	220.10
12	1	1-1/2	236.00



**STAGGERED TOOTH  
SIDE MILLING  
CUTTERS**

Precision made in U.S.A.

**IN STOCK FOR  
IMMEDIATE  
DELIVERY!**

DIAM- ETER	WIDTH OF FACE	SIZE OF HOLE	PRICE EACH
5	1/4	1-1/4	20.95
5	5/16	1-1/4	21.85
5	3/8	1-1/4	23.20
5	5/16	1-1/4	30.80
6	7/16	1-1/4	31.85
6	9/16	1-1/4	35.70
6	11/16	1-1/4	40.05
6	13/16	1-1/4	42.15
6	15/16	1-1/4	44.55
8	5/16	1-1/4	63.20
8	7/16	1-1/4	66.80
8	9/16	1-1/4	70.55
8	11/16	1-1/2	75.65
8	13/16	1-1/2	79.35
8	7/8	1-1/2	83.25
8	1	1-1/2	87.35
10	1/4	1-1/2	87.00
10	5/16	1-1/2	89.10
10	3/8	1-1/2	90.15
10	7/16	1-1/2	95.70
10	9/16	1-1/2	110.85
10	5/8	1-1/2	113.10
10	3/4	1-1/2	129.35
10	7/8	1-1/2	133.30
12	1/2	1-1/2	139.20
12	5/8	1-1/2	160.45
12	3/4	1-1/2	170.95
12	7/8	1-1/2	181.45
12	1	1-1/2	221.65
12	1	1-1/2	238.95

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November, 1955

299

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## NEW SINGLE SPINDLE AUTOMATIC

### "Record A-42"

MAX. TURNING LENGTH  
4-3/4"

WITH LONG TURNING  
ATTACHMENT 7-7/8"

SPINDLE CAPACITY:  
ROUND STOCK 1-21/32"  
HEX. BARS 1-7/16"  
SQUARE STOCK 1-5/32"

Write for Details:

**CEDAR-WEST  
TOOL CO., INC.**

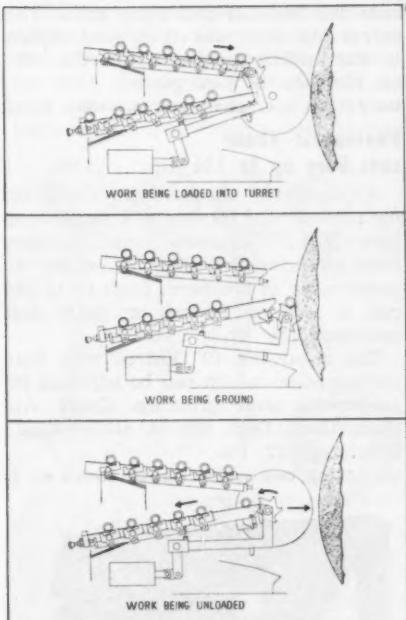
88-90 West St. New York 6, N.Y.



Encircle No. 449 on Card, Opposite Page 65

## Automatic loading attachment for cylindrical grinders

A device for automatically loading workpieces between centers and removing the pieces when ground has been developed by Norton Co., Dept. BB, Worcester 6, Mass. With variations to suit conditions it can be adapted to a wide variety of small parts that can be rolled by gravity on inclined rails, and permits an operator to attend a

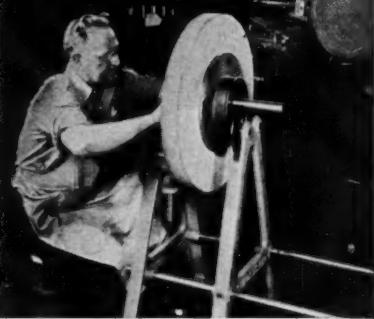


battery of machines.

The device is of the turret type, supporting the work near both ends. A number of workpieces may be placed on the loading rails by the operator or fed to the loader from a suitably placed conveyor. Latches placed along the loading rails separate the parts and release a single piece at a time to the turret.

The turret is carried on a swinging arm, the motion of which is controlled

## Balancing Tools for a Wide Range of Work



Here's a complete line of Balancing Tools which will save their cost quickly on balancing or truing operations. Accurately sensitive and durable, they provide a simple, reliable means for checking the balance of parts like gears, shafts, fly wheels, pulleys, etc. The standard sizes available are shown in capacity chart below.

### CAPACITIES

Swing	Between Standards	Weight Capacity
21 in.	20 in.	12 lbs.
21 in.	20 in.	800 lbs.
43 in.	29 in.	800 lbs.
43 in.	29 in.	2,000 lbs.
6 ft.	5 ft.	5,000 lbs.
8 ft.	8 ft.	10,000 lbs.
Any	Any	24,000 lbs.
43 in.	30 in.	800 lbs.

### FREE DATA



You can obtain complete information on Sundstrand Balancing Tools by writing for bulletin



**SUNDSTRAND MACHINE TOOL CO.**  
2535 Eleventh Street, Rockford, Ill., U.S.A.

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## MEET THE CHAMP! UNIVERSAL DRILL BUSHINGS



UNIVERSAL  
ENGINEERING  
COMPANY

FRANKENMUTH 10, MICHIGAN

179-B

Encircle No. 451 on Card, Opposite Page 65

302

by a small hydraulic cylinder and piston operated by a valve in the operating cycle of the machine. When a work-piece is received in the turret, the arm swings the turret to locate the piece in line with the work centers which, as they enter the center holes, raise the piece to clear the turret fingers and permit free rotation.

After the piece has been ground, the turret arm swings upwards and a latch indexes the turret so that the piece rolls onto the inclined unloading rails. The turret arm continues its upward motion to the loading position where the turret receives the next piece.

Use ACTION Card, opposite page 64. Encircle No. 43

### Pneumatic shear cuts bars up to 1 1/4"

Air-operated shear, Type O-SC-20, for cutting cold ferrous and nonferrous bars up to 1 1/4" square or round, operates from any standard shop air supply or compressor at pressures from 60 to 125 psi. It has no motors or gears and operates only while cutting.

The shear has 10" knives with four cutting edges which can be adjusted by set-screws after grinding. Curry Air Shear Corp., Dept. RH, 941 Oliver Bldg., Pittsburgh 22, Pa.

Use ACTION Card, opposite page 64. Encircle No. 44



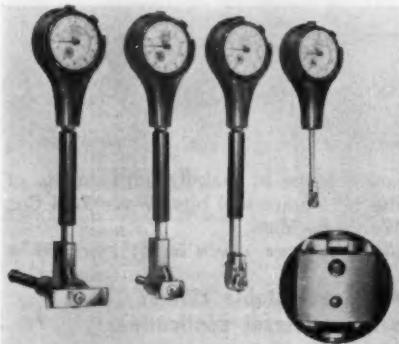
MACHINE and TOOL BLUE BOOK

### Adjustable dial hole gages claim positive centralization

A new series of adjustable dial hole gages is offered by Federal Products Corp., Dept. DR, 1144 Eddy St., Providence, R.I.

High centralizing accuracy makes careful lateral alignment of the gage unnecessary in order to obtain correct measurement of the hole diameter.

The gage can be set without master rings if desired. The centralizing device is said to be so precisely concentric with the gaging contacts that the gage can be set directly to the flat surfaces of the gage blocks, and applied



to the radiused surface of a hole with no significant error. The transfer accuracy in this case is better than 50 millionths of an inch. Gages in this series check hole diameters between  $\frac{1}{2}$ " and 8", with the maximum size for each gage being twice its minimum.

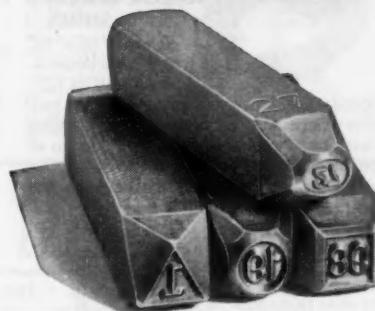
Use ACTION Card, opposite page 64. Encircle No. 45

### Unique tool holder

A newly designed open side tool holder provides the flexibility of the standard yoke type tool holder, but combines with it the rigidity of the conventional open side.

One tightening of the wrench locks the tool bit and tool block securely in place. The tool rocker allows maximum

## INSPECTORS' and CODE SYMBOL STEEL STAMPS...



98  $\frac{5}{16}$ " 98  $\frac{1}{4}$ " 98  $\frac{3}{16}$ " 98  $\frac{5}{32}$ "

ACTUAL SIZE OF IMPRESSION

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YOUR CUSTOMERS recognize your  
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sured dependability.

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standard  $\frac{3}{16}$ ,  $\frac{1}{4}$ ,  $\frac{3}{8}$  and  $\frac{5}{16}$  inch borders.  
Special sizes and symbols on request.

Write for complete Catalog NM-51.

## NEW METHOD STEEL STAMPS, INC.

147 Jos. Campau • Detroit 7

Encircle No. 452 on Card, Opposite Page 65

For Arbor Spacers and Shims,  
Feeler Stock or Shim Stock...

**specify top-quality**



**ARBOR SPACERS**

**AND SHIMS**

20 arbor sizes  $\frac{3}{8}$ " to 4" . . . 19 thicknesses .001" to .125"

Specify with or without keyways. Also available—hardened and ground spacing collars (with standard keyway)  $\frac{3}{8}$ " to 3" long in all popular sizes. (For use in milling, slitting and gang-saw setups, shimming gears and bearings.)

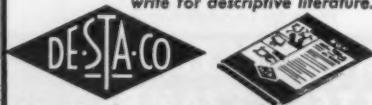
**FEELER STOCK**

Made from tempered stock, rolled to close tolerances.  $\frac{1}{2}$ " x 25' coils packaged in transparent plastic boxes, except above .020". Strips  $\frac{1}{2}$ " x 12", in cellophane. 27 thicknesses. All thicknesses from .001" to .032". (For use in precision fitting, checking clearances, inspection and production work.)



**SHIM STOCK**  
Selected from material rolled to precision limits, free from burrs, and protected by oil coating. Coils packed in carton for easy dispensing and protection. 15 thicknesses .001" to .032". Sheets 6" x 12"; coils 6" x 120". Available also in assortment package of 12 thicknesses .001" to .015".

For details and prices,  
write for descriptive literature.



**Detroit Stamping Co.**

347 MIDLAND AVE. • DETROIT 3, MICH.  
Encircle No. 453 on Card, Opposite Page 65



convenience in making adjustments of the  $\frac{3}{8}$ " square tool bits. Wade Tool Co., Waltham, Mass.

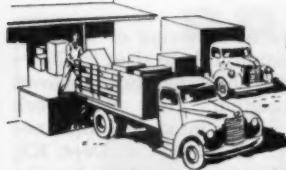
Use ACTION Card, opposite page 64. Encircle No. 46

**Rapid adjustable clamps  
solve universal applications**

Universal tool room clamping applications are claimed to be readily solved by a new self-contained clamp manufactured by the Hi-Lo Tool Products Co., Inc., Dept. B, 18525 Weaver Ave., Detroit 28.

Special blocking and shimming and searching for the correct lengths of bolts for each new setup is overcome by the integral design of the clamp rest. Both the Tee bolt and the clamp rest employ a novel serrated feature that makes rapid adjustment possible. Adaptors for vertical angle plate clamping are offered. Clamp body is forging, heat treated for toughness. Clamp comes in wide range of sizes. Stripping of bolts is eliminated.

Use ACTION Card, opposite page 64. Encircle No. 47

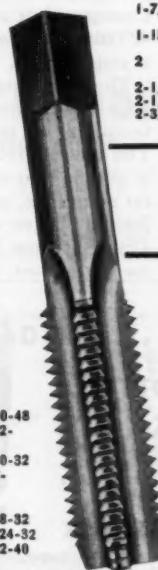


**IN STOCK FOR  
IMMEDIATE  
SHIPMENT**

# Special Taps

## HIGH SPEED RIGHT HAND TAPS

SIZE	THREAD
4	52-48-60-64
5	50-52-56-48-50
6	56-40-48-56-60
7	32-40-48
8	24-30-36-38- 40-44-48
9	24-28-32-40-48
10	28-30-36-40-48-64
12	20-28-32-36-48
14	20-24-28
1/16	60-64
5/64	36-48-72
3/32	48-56-60
7/64	48-56-60
1/8	32-40
5/32	32-36-40-48
9/64	36-40-48
11/64	36
3/16	20-24-32
13/64	32-36-48
7/32	24-28-32
1/4	16-24-26-27- 30-32-36-40-48
5/16	16-20-22-27- 28-32-36-40
3/8	12-16-18-20-27-28-32- 36-40-48
7/16	12-16-18-22-24-27-28- 30-32-36-40
1/2	12-14-16-18-22-24-26- 27-28-30-32-35-40
9/16	16-20-24-27-28-30-32-40-48
5/8	12-14-16-20-24-27-28-32- 36-40
11/16	11-16-18-20-24-27-28-30-32
3/4	9-11-12-14-18-20-24-26- 27-28-32
13/16	10-14-18-20-27-32
7/8	10-12-16-18-20-24-27-28-32
15/16	8-9-10-12-14-16-18-20-24-32
1	10-12-16-18-20-24-27-32-40
1-1/16	12-14-16-18-20-24
1-1/8	8-10-14-16-18-20-24-32
1-3/16	8-10-12-14-16-18-20-24
1-1/4	8-10-14-16-18-20-24-32
1-5/16	12-14-16-18-20-24-32
1-3/8	8-10-14-16-18-20-24
1-7/16	8-10-12-16-18-20-24
1-1/2	8-10-14-16-18-20-24-28
1-9/16	18-20-24-36
1-5/8	3/4-8-10-12-13-16-18-20-24
1-11/16	10-12-14-16-18-20-24



SIZE	THREAD
1-3/4	8-10-12-14- 16-18-20-24
1-13/16	8-10-12-14- 16-18-20-24
1-7/8	8-10-12-14- 16-18-20-24
1-15/16	8-10-12-14- 16-18-20-24-28
2	4½-6-10- 12-16-18-20
2-1/16	12-14- 16-18-20
2-1/8	12-16-20
2-3/16	12-16

SIZE	THREAD
2-1/4	4½-6-12- 14-16-18
2-5/16	12-16-18
2-3/8	12-16-18
2-1/2	6-10-12
2-9/16	18
2-5/8	12-16-20
2-3/4	18
2-7/8	8-12-16
3	8-16
3-1/4	8-12-16
3-1/2	8-12-16
3-7/8	6
4	8-12

## HIGH SPEED LEFT HAND TAPS

SIZE	THREAD	SIZE	THREAD
0	80	11/16	11-16-24
1	56-64-72	3/4	10-16-19-20
2	56-64	13/16	16
3	56	7/8	9-12-14-18-20
4	32-36-40-48	1	8-12-14-18-20
5	40-44	1-1/8	7-12
6	32-36-40	1-1/4	7-12-16-18
8	32-36-40	1-3/8	6-8-10-12-16-18- 20
10	24-30-32-40	1-7/16	10-12-14-18-18-20
12	24-28-32	1-1/2	8-10-12-16-18-20
1/4	20-24-28	1-9/16	8-10-12-16-18-20
5/16	19-28-24	28-32	8-10-12-14-16-18-20
9/16	16-24-32	1-11/16	8-10-12-14-16-18-20
7/16	14-20-28	1-3/4	8-10-12-14-16-18-20
1/2	12-13-20-28	1-13/16	8-10-12-14-16-18-20
9/16	12-18-20-24	1-7/8	8-10-12-14-16-18-20
5/8	11-12-18-	1-15/16	8-10-12-14-16-18-20
	20-24	2	4½-10-12

## LEFT HAND AND SPECIAL DIES IN STOCK

PRICES ON APPLICATION. NEW SIZES  
ADDED FREQUENTLY

**NOTE:** Oversize taps. Special size reamers. H. S. extension drills. H. S. Taper length drills. No. 1 to No. 60—Letter sizes A to Z. Fractional sizes  $1/8$ " to  $1/2$ " Overall 9" flute length. H.S.S. aircraft drills 6" and 12" long.

## WE SPECIALIZE IN HIGH SPEED CUTTING TOOLS

SPECIAL PRICES TO DEALERS

ALL TOOLS SOLD ON A MONEY BACK GUARANTEE

**WESTERN TOOL SUPPLY COMPANY**

617-19 W. Randolph St., Chicago 6, Ill. PHONE: Randolph 5-4113

— MONTHLY BULLETINS AVAILABLE —

Encircle No. 454 on Card, Opposite Page 65

November, 1955

305

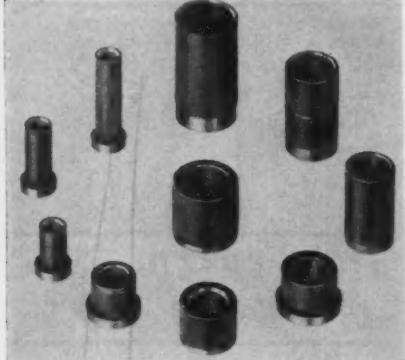
### New type bushing

Merriman bushings have unique outer surfaces which create dozens of hard cutting edges. The bushing can then be forced into parts of cast metal, plastics, steel and other metals without the necessity of close tolerance press fits.

This feature is claimed to elimi-

nate high precision boring or reaming. Greater variation in hole sizes is allowable since the bushing cuts its own way into position. They will work satisfactorily with a maximum tolerance of .002". M. C. Crawford Co., Dept. KE, 2521 West Slauson Ave., Los Angeles 43, Calif.

Use ACTION Card, opposite page 64. Encircle No. 48



### Flame-cutting machine

A flame-cutting machine featuring a permanent magnetic roller, the No. 42 Camograph, cuts any shape up to a full 42" circle and straight lines to 92" with a single torch.

The permanently magnetized tracing roller is reported to follow a metal template of the most intricate shape. The motor drive shaft is equipped with a simple worm-gear drive; there are no couplings, pulleys or belts. Air Reduction Sales Co., Dept. MG, 60 East 42nd St., New York 17, N.Y.

Use ACTION Card, opposite page 64. Encircle No. 49

## Save Time...Labor...Materials with



### Inside SLOTTER

Makes cuts up to 8" inside edge of sheet. Sharp, clean burr-free cuts always assured. Cap. 16 ga. High strength aluminum alloy body; H.C.H.C. blades.

### Throatless SHEAR

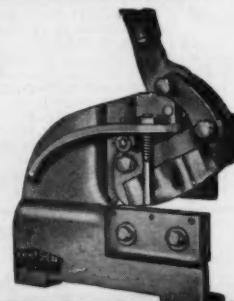
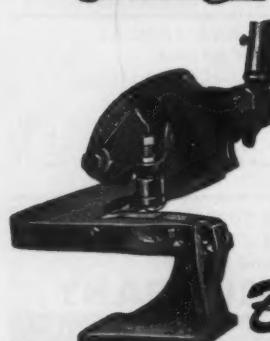
Make any cut—straight, irregular, curved. Exclusive design permits turning work any direction while cutting. 4 models—cap. to 3/16".

### Slitting SHEAR

New "SS" Series—easier cutting with compounded linkage. 3 models—cap. to 3/16"; trimming capacity to 5/16" mild.

See your Beverly Distributor.  
Write for FREE illustrated  
Bulletin.

## BEVERLY metal cutting SHEARS



**Beverly SHEAR MFG. CO.**

3005 W. 111th STREET • CHICAGO 43, ILLINOIS  
Encircle No. 455 on Card, Opposite Page 65

**PDC**

**AUTOMATIC INDEXING  
ASSEMBLY  
PRESS**



CAPACITIES  
TO 6 TONS  
  
14 $\frac{3}{4}$ " DIAMETER  
DIAL PLATE  
  
ELECTRIC  
MOTOR DRIVE

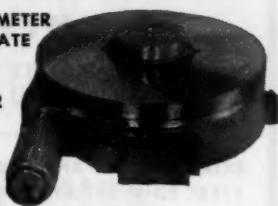
**PDC**

**AUTOMATIC GENEVA  
MOTION INDEX TABLES**

14 $\frac{3}{4}$ " DIAMETER  
DIAL PLATE

ROTARY  
AIR MOTOR  
DRIVE

COMPLETE  
WITH ALL  
CONTROLS



**PRECISION DETROIT CO. 20103 SHERWOOD  
DETROIT 34, MICH.**

CALL YOUR AREA REPRESENTATIVE:

CHICAGO.....ORchard 5-6929  
CLEVELAND.....Boulevard 2-4740  
CINCINNATI.....AVon 1-1136  
INDIANAPOLIS.....MElrose 4-4473  
LOS ANGELES.....Victoria 9-1803

DETROIT (Home Office & Plant), TWInbrook 2-5331

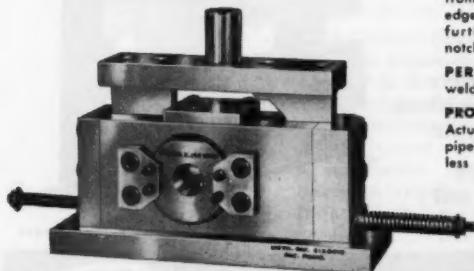
Territories Available for Representation

NEW HAVEN, CONN.....SPruce 6-4932  
NEW YORK CITY.....Murray Hill 3-6135  
PHILADELPHIA.....Michigan 4-0807  
SAN FRANCISCO.....Olympic 3-3161  
ST. LOUIS.....JEfferson 5-1223

Encircle No. 456 on Card, Opposite Page 65

**NOTCH**

THESE ENDS WITH ONE  
STROKE OF PUNCH PRESS  
**ARC-FIT TWIN NOTCH**



PATENT PENDING

NO DEFORMATION Shears from inside out—cuts clean edges; eliminates need for further finishing; aligns notches automatically.

PERFECT "V" Joints for welding or brazing.

PRODUCTION NOTCHING Actual production time per pipe or tube end reduced to less than 3 seconds.

INTERCHANGEABLE  
Punches and dies up to 2 $\frac{1}{2}$ " O.D. pipe or tube for STANDARD TWIN NOTCH.  
(Special units available up to 3" O.D.)



SEND FOR  
DESCRIPTIVE  
LITERATURE

**VOGEL TOOL AND DIE  
CORPORATION**

1825 N. 32nd Ave. Melrose Park, Illinois  
Fillmore 5-0160

Encircle No. 457 on Card, Opposite Page 65

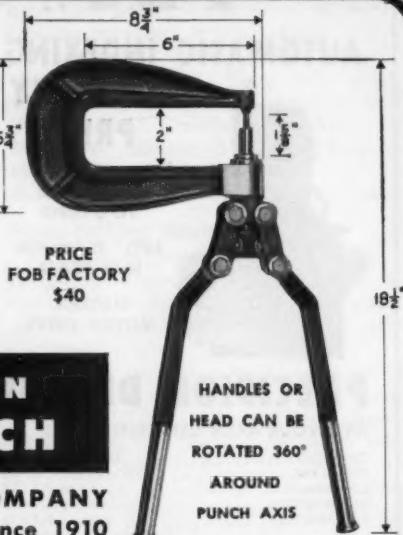
November, 1955

**POWERFUL,  
TOGGLE-ACTION  
DEEP-THROAT  
PUNCH  
CAPACITY  
1/4" ROUND THRU 16 GA.**

**EXTRA PUNCHES AND DIES  
1/16" TO 9/32" BY 1/64"-50c each**

**WHITNEY-JENSEN  
No. 15 PUNCH**

**WHITNEY METAL TOOL COMPANY  
718 Forbes St., Rockford, Ill., Since 1910**



Encircle No. 458 on Card, Opposite Page 65

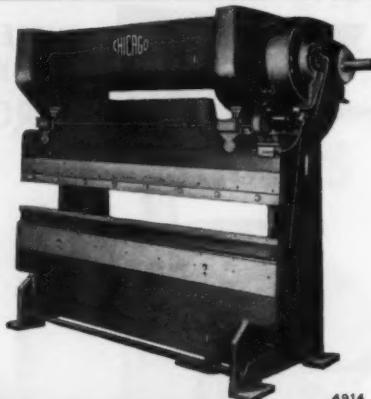


**STEEL  
PRESS  
BRAKES**

**43 Standard Sizes**

Readily adapted for a wide variety of bending, forming, drawing, notching, blanking, punching, embossing, etc.

**DIES** Complete Line of Induction Hardened Dies for All Makes and Sizes of PRESS BRAKES.



4914

**DREIS & KRUMP**  
MANUFACTURING COMPANY

7440 S. Loomis Boulevard, Chicago 36, Illinois

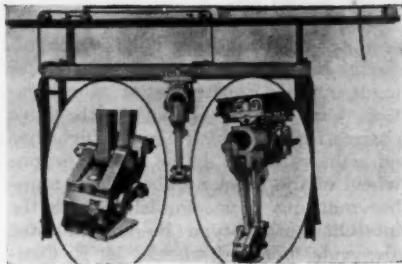


Encircle No. 459 on Card, Opposite Page 65

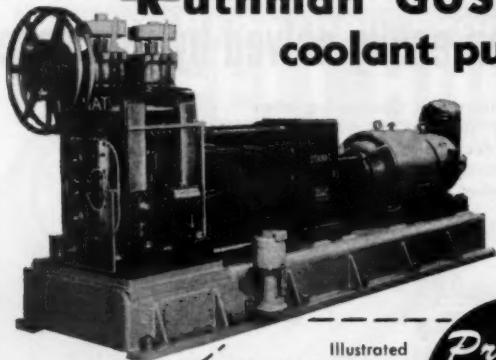
MACHINE and TOOL BLUE BOOK

### Pneumatic billet marker

The Model 701 pneumatic billet marker has a special air operated positioning unit with a four-way valve. A 6-foot air cylinder provides operating power and enables stamping machine operator to quickly position the marker in front of slab or billet. Another efficient method of positioning can be provided by adapting a 1 hp Trojan trolley, connected directly to the top



## Ruthman GUSHER coolant pumps



Illustrated  
Stanat Model TA-624  
Combination Rolling Mill  
equipped with a Ruthman  
Gusher Coolant Pump.

**Precision  
Built  
FOR EFFICIENT  
OPERATION**

Each Gusher Coolant  
Pump is precision built —  
a credit to the metal working  
machines in which they are installed.  
The dynamically balanced rotating  
assembly cuts vibration and wear to  
a minimum. Pre-lubricated ball-  
bearings require no further attention.  
There is no priming or packing  
necessary. Your Gusher Coolant  
Pump is a highly efficient pre-  
cision machine.

**THE RUTHMAN MACHINERY CO.**

1816 READING ROAD

CINCINNATI, OHIO

Encircle No. 460 on Card, Opposite Page 65

of the Model 701.

Illustrated in the insert is a close-up of the special marking head which includes heavy duty marking wheels for ingot number and cut letter identification. One wheel is made with quick change feature which can be furnished on either the cut letter wheel or one wheel of the ingot number. Heat number marking is accomplished with the interchangeable type holder mounted alongside marking wheels. M. E. Cun-

ningham Co., Dept. RH, 1043 Chateau St., Pittsburgh 33, Pa.

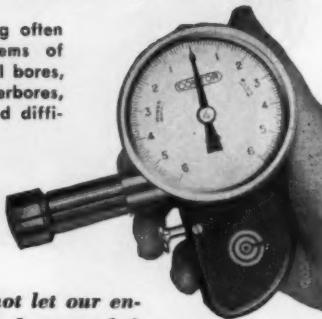
Use ACTION Card, opposite page 64. Encircle No. 50

### Indexing dial feed tables

Indexing dial feed tables, Models 725-EA and 725-EB, capable of indexing on 24 indexes at 300 cycles per minute with a 40 pound load on the top of the  $7\frac{1}{4}$ " diameter plate, are designed for use in areas where space is limited.

## SPECIAL Internal Gaging Problems are often easily solved by this gage

With slight modifications Comtorplug often is the simplest solution to problems of gaging splines, deep holes, spherical bores, blind holes, shallow holes, counterbores, shoulders and other bores considered difficult to gage.



*If you have a 'toughie', why not let our engineering department see what they can do?*

### COMTORPLUG with interchangeable expanding plugs to gage simple or special bores from $\frac{1}{8}$ " to 8" dia.

#### UNIQUE ADVANTAGES

Positive gaging accuracy to fraction of  $.0001$ " regardless of who operates it.  
Indicates actual size, a fixed—not passing—reading.  
Positive 2-point gaging—automatic centering.  
Shallow holes, deep holes, inside splines, open-end holes gaged easily.  
Detects ovality, back or front taper, bell mouth, barrel shape.  
Reaches to bottom of blind holes.  
Gages work while still held in chuck.  
A shop tool for all-day every day use.  
Portable—no wires, hoses or stands.

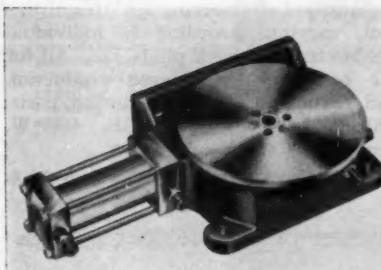
Investigate the gage used by the thousands in jet engine, guided missile, farm machinery, automotive transmission, household appliance, and other volume-precision plants. IT MAKES PRECISION GAGING EASY . . . at machine . . . at inspection bench . . . for selective assembly. No other like it—investigate and see why.

#### COMTOR CO.

62 Farwell Street  
Waltham 54, Mass.



GET THE FACTS—REQUEST BULLETIN 48  
Encircle No. 461 on Card, Opposite Page 65



A 10" diameter plate is optional. Mounting is provided for either horizontal or vertical application and compressed air is available through the center stud for actuation of secondary equipment. The tables can be set for either 4, 6, 8, 12 or 24 indexes per revolution and special indexes are available on order.

Model 725-EA is furnished without control valves and 725-EB comes equipped for fully automatic operation.

# Rotary Broaches Produce **PERFECT HOLES**

USE THIS NEW MACHINING METHOD—ROTARY BROACHING\*

"Rotary Broach" & "Rotary Braaching" are new names coined & copyrighted by Shearcut Tool Co.  
Patents in Canada, U.S. and Foreign Patents Pending - 1947

Patented in Canada, U.S. and Foreign Patents Pending - 1947

**SHEARCUT TOOL COMPANY**  
7045 DARRY AVE. RESEDA, CALIFORNIA

7045 DARBY AVE.

## RESEDA, CALIFORNIA

**Encircle No. 462 on Card, Opposite Page 65**

and controls regulating dwell time and forward motion without electricity. Accuracy is  $\pm .001$  at the periphery of the standard top plate. A. K. Allen Co., Dept. MG, 57 Meserole Ave., Brooklyn 22, N. Y.

Use ACTION Card, opposite page 64. Encircle No. 51

### Piloted reamers

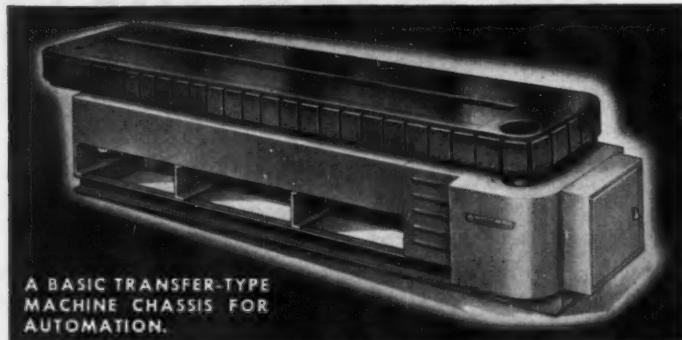
Chicago-Latrobe piloted reamers are made to the customer's specific requirements—in both high speed steel and carbide. There are many special

designs and engineering features of this tool, varying according to individual needs—front or back pilots, etc.—all for the purpose of increased production and reduction in manufacturing costs. Chicago-Latrobe, Dept. BB, 411 W. Ontario St., Chicago 10, Ill.

Use ACTION Card, opposite page 64. Encircle No. 52



## *Swanson* Announces... the AUTO-TRAN unit



This versatile, transfer-type indexing chassis is available in standard models with 48, 54, 60, 66 or 72 carriers; 3", 6", 9" or 12" index travel; vertical or horizontal mounting surfaces on carriers.

also offers standard turret indexing units, with turret diameters from 20" to 72" and a complete range of indexing rates and dwell times.

If an automation program is in your plans, write, wire or phone for full details on these Swanson standard components.

*Swanson*

**SWANSON**  
TOOL & MACHINE PRODUCTS INC., ERIE, PA.

ENGINEERS AND BUILDERS OF AUTOMATIC AND SPECIAL PURPOSE MACHINES

Encircle No. 463 on Card, Opposite Page 65

The machine shown here was built by Rehnberg-Jacobson to perform a series of drilling, tapping, and reaming operations.



## MAKE IT YOURSELF? You can do it with R-J UNITS

Rehnberg-Jacobson ALL-MECHANICAL Drill, Tap, and Index Units are specially designed for YOU to use for making up YOUR OWN special-purpose machines — or for adding to or modifying some of the special-purpose (or standard) machines you now have. They are accurate, efficient, economical — and available in enough models and sizes to suit most every need. WRITE TODAY for Data Sheets giving complete engineering information.

**TAP UNITS**, for example, are made in four capacities from  $5/16$  -  $18$  and  $1-1/4$ " stroke to  $1-1/2$  -  $6$  and  $4-1/2$ " stroke. They are self-contained, with lead screw feed.



**REHNBERG-JACOBSON MFG. COMPANY**

2135 KISHWAUKEE ST., ROCKFORD, ILLINOIS

Encircle No. 464 on Card, Opposite Page 65

## PERFECT ALIGNMENT Every Time with ROOFE Heavy-Duty BULL NOSE CENTERS

Two double rows of quality bearings in the large and small ends of the nose of this live center are your assurance of perfect alignment on any type of work.

Two shank sizes provide diameters from  $1/2$ " to  $7\frac{1}{2}$ " for a wide range of work with a single center.

Write now for complete catalog of all types of ROOFE Live Centers.



**HOUSTON GRINDING & MFG., CO., Inc.**

2110 QUITMAN STREET • HOUSTON 10, TEXAS

*Reliable Distributors Wanted*

November, 1955

Encircle No. 465 on Card, Opposite Page 65

## How SQUARE HOLED SLEEVES SPEED UP TOOL-MAKING!

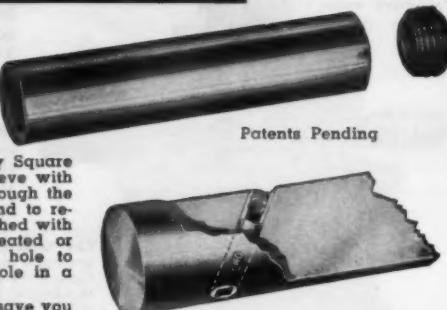
One of the most difficult problems in tool making can be solved easily and quickly with Sturdy Square Holed Sleeves. The perfection of broached square holes can be had in boring bars, milling cutters and many other applications at a small fraction of the cost of imperfect hand-made square holes. The Sturdy Square Holed Sleeve consists of a round sleeve with a perfectly square hole broached through the center. This hole is tapped at one end to receive a back-up screw which is furnished with the Sleeve. The Sleeve can be sweated or pressed into a drilled and reamed hole to make a perfectly square accurate hole in a very few minutes.

The Sturdy Square Holed-Sleeve will save you many hours and many dollars in the making of boring bars, tool holders and other tools requiring square holes.

SLEEVES MADE IN THE FOLLOWING SIZES:  
3-16, 1-4, 5-16, 3-8, 7-16, 1-2, 5-8, 3-4, 1"

**STURDY BROACHING SERVICE, INC.**  
23516 TELEGRAPH ROAD DETROIT 19, MICH.

Patents Pending



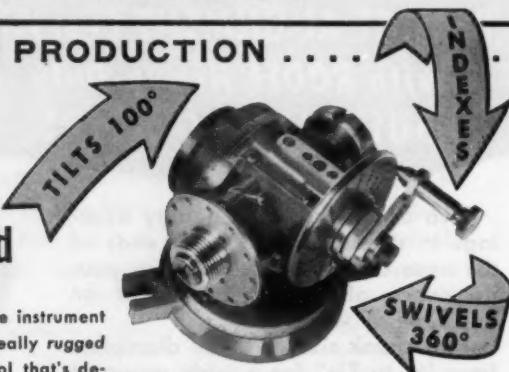
Write for  
Literature

Encircle No. 466 on Card, Opposite Page 65

## FOR FASTER PRODUCTION . . . . .

the  
**ELLIS**  
dividing head

Although it is built to fine instrument standards, the ELLIS is a really rugged tool room or production tool that's designed for unusual versatility. Its universal motions — swiveling in two planes — will save time and increase profits and accuracy on your millers, grinders, drill presses and jig borers. It has 6½" swing, or 11"



swing when used with riser blocks. Work may be held between centers, or in chucks or collets. To save rehandling of work, and to save money, investigate the ELLIS by writing for complete details!

**NICHOLS-MORRIS CORP.**

76-N MAMARONECK AVE.  
WHITE PLAINS, N.Y.

Encircle No. 467 on Card, Opposite Page 65

MACHINE and TOOL BLUE BOOK

### Hydraulic resistance unit

A self-contained hydraulic resistance unit, the Bellows precision control Hydro-Check, controls movement so that a preset feed rate will be maintained with virtually 100% accuracy, unaffected by changes in temperature, load and air line pressure, the manufacturer claims.

It features automatic flow and thermal compensation. A liquid-filled metallic



bellows constantly corrects the flow control valve in accordance with changes in hydraulic oil temperature. An upstream flow control regulator compensates for variations in load and

FREE BOOKLET  
... see how diamond  
can cut your finishing  
costs how to use  
diamond most  
economically.

Finish with  
diamond...  
Elgin Diamond!

# ELGIN Diamond

...another famous-for-quality ELGIN Product

Precision graded in Elgin's own laboratories and scientifically compounded for maximum abrasive efficiency . . . recognized as the standard for diamond abrasive quality. Elgin Diamond saves hours of finishing time more precious than diamond itself. Write today for your copy of "Finish with diamond—ELGIN DIAMOND".

**ABRASIVES DIVISION, DEPT. K**

**ELGIN NATIONAL WATCH COMPANY**

ELGIN, ILLINOIS

Encircle No. 468 on Card, Opposite Page 65

November, 1955

315

fluctuations in air line pressure. A sintered metal filter is incorporated to break up any minute residual air bubbles in the fluid, insuring a flow action that is smooth and consistent. The unit is available in standard stroke lengths of 2, 4, 6, 9, 12, 15, or 18 inches. Control may be on either forward or retract stroke, or both. The Bellows Co., Dept. RH, Akron, Ohio.

Use ACTION Card, opposite page 64. Encircle No. 53

#### Universal vernier caliper

The Etalon No. 17 universal vernier caliper is constructed of hardened stainless steel. Deeply divided graduations permit easy read. Both the vernier and



# PRICE LIST

## ON HANNIFIN STOCK HYDRAULIC PRESSES

1-TON .....	\$ 552
2-TON .....	\$ 627
5-TON .....	\$1,286
8-TON .....	\$1,581
10-TON .....	\$1,855
25-TON .....	\$3,681

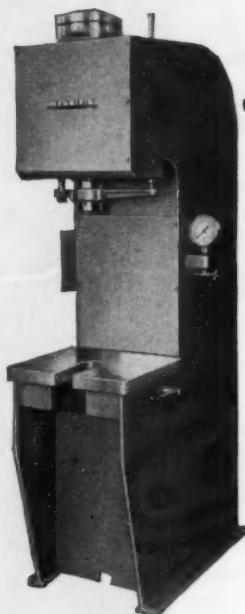
Prices complete with motors and starters F.O.B. our press plant, St. Marys, Ohio, subject to change without notice.

#### DELIVERY FROM STOCK

Demand for these popular presses is so consistent we are able to produce them in quantity and pass the savings along to you.

Construction-wise and quality-wise these small general-purpose presses are identical to the larger Hannifin presses, up to 150 tons. Special, optional controls when needed.

WRITE for complete information on the Hannifin Hydraulic Press you're interested in.



# HANNIFIN

HANNIFIN CORPORATION, 529 S. WOLF ROAD, DES PLAINES, ILLINOIS

Encircle No. 469 on Card, Opposite Page 65

scale are in a dull chrome non-glare finish which will not chip or peel. Available in English or English and Metric graduations. Alina Corporation, Dept. M.G., 401 Broadway, New York City.

Use ACTION Card, opposite page 64. Encircle No. 54

### Exhibitors use leveling mounts

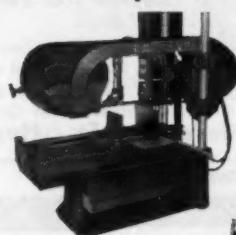
Because the leveling mounts manufactured by Barry Controls, Inc., Watertown, Mass., facilitate mobility of ma-

chines, more than fifty manufacturers used the mounts to move equipment into their booths for the recent Chicago shows. By using the mounts, the exhibitors saved time in setting up their booths and also saved money in not having to lag their equipment to the floors of the auditorium. Machines were ready for operation within minutes after reaching the booth.

Since the mounts served as shock and

# METAL "CUT-OFF"

becomes a preferred job...



### featuring . . .

- Easily Controlled Operation
- Fast, Accurate Action
- High Job Productivity
- Low Operating Cost
- Long, Dependable Service



• Production, or utility "cut-off" work in your shop becomes a *Preferred Job* with a Wells Horizontal Metal Cutting Band Saw, because the *operation* is so *easy to control*. Even in the hands of the "new guy," a Wells Band Saw can be counted on to *Reduce your Production Costs*, through greater efficiency, more accurate cutting and real dependable service.

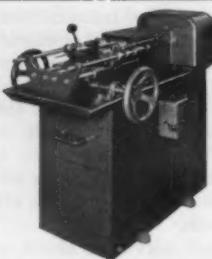
Call your Wells Distributor, or write for *Job-Engineering Service*.



*The Pioneers of Horizontal*  
**METAL CUTTING  
BAND SAWS**

WELLS MANUFACTURING CORPORATION  
707 COOLIDGE AVE. - THREE RIVERS, MICH.

Encircle No. 470 on Card, Opposite Page 65



*for rapid threading*  
OF SCREW BLANKS AND SIMILAR PARTS

## The KENT 2-Spindle BOLT THREADER

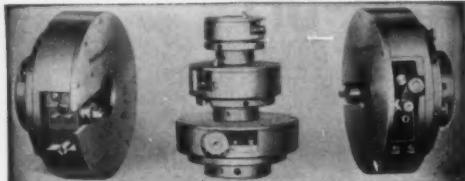
Alternate feeding to two spindles. Continuous operation. Large output. Low costs. Change-overs made quickly. Minimum skill required.

Write for illustrated literature.

**The KENT MACHINE CO., Cuyahoga Falls, O.**

Drillers • Threaders • Slotters • Countersinkers • Bar Pointers

Encircle No. 471 on Card, Opposite Page 65



## MUMMERT-DIXON FACING HEADS

with Automatic Feed

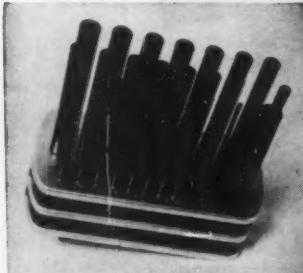
One-way Tool Feed—6, 9 and 10" sizes.

Two-way Tool Feed—9, 12, 16, 20, 24, 30, 36, 40 and 46" sizes. Save many costly set-ups.

Bulletin No. 4141 Gives Full Details

**MUMMERT-DIXON CO., 122 Philadelphia St., Hanover, Pa.**

Encircle No. 472 on Card, Opposite Page 65



### A MATCHED SET OF TRANSFER PUNCHES for toolmakers, machinists & tool cribs

Used for transferring location of threaded, drilled and reamed holes, slugs, blanks, etc.

Single Sizes Available

.0025 undersize to facilitate use.

Precision made of finest tool steel.

Carefully heat treated and tempered for long life.  
SET No. 3-17-28 punches with indexed stand—  
Sizes 3/32" to 1/2" by 1/64" plus 17/32" size—  
length 4-7/8"

PRICE, only \$16.00

**R. L. SPELLMAN CO. — URBANA, OHIO**

Encircle No. 473 on Card, Opposite Page 65

## INSTANT ACTION RAPIDSET

by HARTMANN



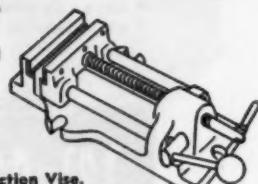
All Purpose Tool Room and  
Machine Shop Vises.

## The JAWSET

Adjustable Pressure Production Vise.

For Information Write Dept. M

**Hartmann Mfg. Co., 1637 Gold St., Racine, Wisconsin**



Encircle No. 474 on Card, Opposite Page 65

vibration isolators, machines are reported to have performed efficiently regardless of the type of equipment located in the next booth.

Use ACTION Card, opposite page 64. Encircle No. 55

#### Hones selected by color

The A.I.T. Diamond Tool Co., Dept. RB, 8221 N. Kimball Ave., Skokie, Ill., has announced the Lite diamond impregnated hand hone, incorporating "color-matic" selection of different size

diamond particles. The color has been incorporated into the transparent plastic handle. A clear handle distinguishes roughing hones, red distinguishes medium finishing, and blue distinguishes fine finishing.

A combined hone features two separate bonds in one hone. On one end of the hone Al-Aloid bond is used to do a roughing job. On the other end, Resin bond does a finishing job.

Use ACTION Card, opposite page 64. Encircle No. 56

## CLIP THIS to get KEYWAYS for 1¢ Each

**The duMONT CORPORATION  
Greenfield, Massachusetts**

MAIL FREE BROACH CATALOG AND  
PRICE LIST T describing 26 standard kits, 49  
standard broach sizes, 59 bushing sizes, standard  
square, hexagonal and production type broaches  
and a wide range of SPECIAL BROACHES to

Name .....

Company .....

Address .....



**HS SQUARE  
BROACHES**



**HS HEXAGON  
BROACHES**

With a *Minute Man* Keyway Broach Kit you can cut your own keyways by hand for as little as a cent a piece. You'll have the job done in one minute, far quicker, far cheaper than setting up an expensive machine tool. Kits are available to handle keyways from  $\frac{1}{16}$ " to 1" in any bore from  $\frac{1}{4}$ " to 3".

*Minute Man* High Speed Steel Square Broaches, Hexagonal Broaches and Production-type Keyway Broaches are available from stock at your Industrial Distributor's in a wide range of sizes.

**The duMONT CORPORATION, Greenfield, Mass.**

Encircle No. 475 on Card, Opposite Page 65

November, 1955

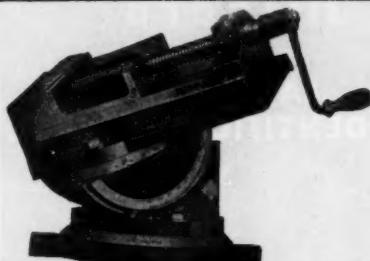


## SET UP COMPOUND ANGLES INSTANTLY!

Now save valuable time on intricate, angular set-ups with the fully universal MASTER MULTI-SWIVEL VISE. Three swivels instantly set any compound angle. Used worldwide. Interchangeable platens optional.

Write for circular.

**DONOVAN MFG. CO.**  
80 Batterymarch St. Boston 10, Mass.



Encircle No. 480 on Card, Opposite Page 65

### Drilling machines announced

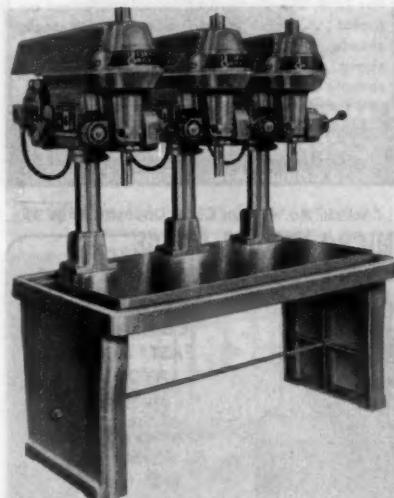
New 18" Royal Model LE drilling machines have been announced by Cincinnati Lathe and Tool Co., Dept. HS, Cincinnati 9, Ohio. Single spindle floor models and single and multiple spindle production bench models are available now.

Rated at 1" capacity in cast iron with a 1 hp motor, the machines are equipped with a No. 2 Morse taper spindle. A No. 3 Morse taper spindle is optional.

Electrical controls are built-in and convenient. A simple V-belt drive transmits motor power directly to the 6-splined spindle, for full torque at all spindle speeds. Six spindle speeds are provided ranging from 390 to 3100 with an 1800 rpm motor; 324 to 2580 with a 1500 rpm motor; 259 to 2060 with a 1200 rpm motor; or 216 to 1715 with a 1000 rpm motor. Spindle speed changes are made easy by a tilting motor bracket which also maintains uniform belt tension, the manufacturer claims.

A direct-reading depth dial incorporates a positive stop.

Use ACTION Card, opposite page 64. Encircle No. 57



## DYKEM STEEL BLUE<sup>TM</sup>

### Stops Losses

making Dies and  
Templates

Popular package  
8-oz. can fitted  
with Bakelite cap

holding soft-hair  
brush for applying right  
at bench; metal surface

ready for layout in a few  
minutes. The dark blue background  
makes the scribed lines show up in  
sharp relief, prevents metal glare.

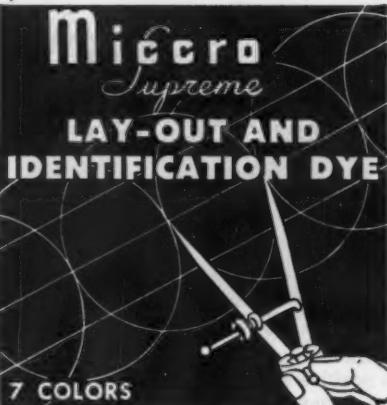
Increases efficiency and accuracy.

Write for sample on company letterhead  
THE DYKEM COMPANY  
2301G North 11th St. • St. Louis 6, Mo.

Encircle No. 481 on Card, Opposite Page 65

November, 1955

321



For Tool, Die, Pattern or Template layout on metal . . . Quick identification of bar stock, sheets, strips or parts . . . Shows up in sharp relief—dries instantly . . . Write for sample and circular on company letterhead.

### MICHIGAN CHROME & CHEMICAL COMPANY

8615 Grinnell Ave. • Detroit 13, Mich.

Encircle No. 482 on Card, Opposite Page 65

### MICRO-HEIGHT GAUGE



NO OTHER GAUGE COMPARES FOR FAST, ACCURATE LAYOUT AND MEASURING

Capacities to 6" when used with this GREIST 3" Riser

The Micro-Height Gauge is a precision instrument, finished in satin chrome, which reads like a micrometer and measures from zero at base to 3" in thousandths. Use as a scribe for fast layout, or insert dial indicator for quick, accurate inspection.

THE GREIST MANUFACTURING CO.  
447 Blake St., New Haven 15, Conn.

Encircle No. 483 on Card, Opposite Page 65

322

MARK and DEMAGNETIZE  
IN  
ONE OPERATION

THE  
*Luma*  
TOLEDO, OHIO  
WAY



The Luma combination etchtool and demagnetizer etches, demagnetizes, anneals and solders. Permanently marks hardest steel with ease of a pencil.

Write for complete information.

Luma Electric Equipment Co.  
P. O. BOX 132-H TOLEDO 1, OHIO

Encircle No. 484 on Card, Opposite Page 65

Over 85% of the torque wrenches used in industry are

### Sturtevant TORQUE WRENCHES

Read by Sight, Sound or Feel

- Permanently Accurate
- Practically Indestructible
- Faster—Easier to use
- Automatic Release
- All Capacities

in inch grams  
...inch ounces  
...inch pounds  
...foot pounds



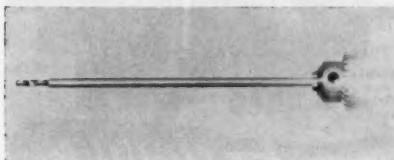
Every manufacturer,  
design and production  
man should have this valuable  
data. Sent upon request.

PA | Sturtevant Co.  
ADDISON | ILLINOIS

Encircle No. 485 on Card, Opposite Page 65  
MACHINE and TOOL BLUE BOOK

## Drill extension uses discarded broken drills

A broken drill and a simple twist of the fingers is all that is required to make up a drill extension, using a unique device recently developed by Drilex Tools, Inc., Dept. MG, Huntington Station, N.Y. Users of cobalt drills, used for titanium and other hard metals, find the device useful for prolonging the life of the units.



One piece construction assures a positive lock. Size range: No. 50 to No. 10; or 1/16" to 3/16" by 64ths. Standard length is 10". Other drill sizes and special lengths are available on special order from the manufacturer. Drilex Tools, Inc., Dept MG, 622 E. Jericho Tpke., Huntington Sta., L.I., N.Y.

Use ACTION Card, opposite page 64. Encircle No. 58

## Four-way air valve for air range up to 250 psi

Four-way air valve Model 2801, for the shop air range up to 250 psi, has been added to the line of Barksdale "Shear-Seal" valves.

Incorporated in the new design are a number of features to make plumbing and mounting easier. Any port may be used as the pressure port and the valve body may be rotated in 90° intervals for most convenient piping. The valves are available in 1/4" and 3/8" port sizes. Barksdale Valves, Dept. B, 5125 Alcoa Ave., Los Angeles 58, Calif.

Use ACTION Card, opposite page 64. Encircle No. 59



November, 1955

*Hammond*  
of KALAMAZOO

MODEL

VH-2

## FLEXIBLE ABRASIVE BELT GRINDER

"The All Purpose  
Machine"

- CONTACT
- FLEXIBLE
- PLATEN
- CONTOUR



FLOOR OR  
BENCH TYPE

Hammond Machinery Builders

1614 Douglas Ave. • Kalamazoo 54, Mich.

Encircle No. 486 on Card, Opposite Page 65

## Chatterless!

use  
**NOBURSINK**

for... Unequalled  
Performance



in  
• Deburring  
• Chamfering

**NOBUR** MANUFACTURING CO.  
717 No. Victory Boulevard, Burbank, California

Encircle No. 487 on Card, Opposite Page 65

**TAMMS**

# Blue Layout Dope

won't chip, crack or flake off!

Dries fast! Oil resistant!  
Best dope you ever used!

WRITE FOR SAMPLE!

**Tamms Industries, Inc.**

228 N. La Salle St. • Chicago, Ill.

Encircle No. 488 on Card, Opposite Page 65

Save your large  
**JIG BORERS**  
for large jobs . . .  
put small precision  
work on the  
**LINLEY**

The Linley Jig Borer provides the means . . . at very low cost . . . of handling your most exacting requirements in precision. With it you can cut slots through having a tool exactly fitted to your small work . . . save your larger machines for larger work.



**SPECIFICATIONS**

Table Movement: 0" x 10" Table Size: 7" x 17 1/2"  
Send for complete information TODAY!

**LINLEY BROTHERS CO.**  
663 State St. Ext. Bridgeport 1, Conn.

Encircle No. 489 on Card, Opposite Page 65

324



Hinged Hammer Moulds  
1, 2 1/2 and 5 lb. sizes—order your alloy lead hammer requirements from your machine tool supply house  
or direct from:  
**KITZMAN MFG. CO.**  
15061 Hartwell Ave. Detroit 27, Mich.  
Encircle No. 490 on Card, Opposite Page 65

**Peaslee**  
**DOWELS, PINS,**  
**SHAFTS, ETC.**

Specializing in Stainless Steel  
Standard and Made to Order Precision Parts  
Send Your Blueprints for Prompt Quotations

**PEASLEE METAL PRODUCTS CO.**  
470 Tolland St.  
EAST HARTFORD, CONN.

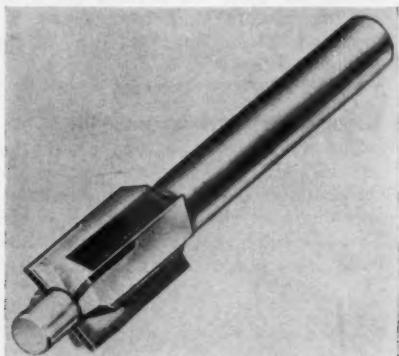
Encircle No. 491 on Card, Opposite Page 65

MACHINE and TOOL BLUE BOOK

### Carbide-tipped counterbores

Carbide-tipped counterbores, Series 600, for precise cutting of non-ferrous metals are now available from the Nelco Tool Co., Dept. B, 268 Center St., Manchester, Conn.

The carbide tip ends less than .015" from the pilot hole allowing the use of pilots only 1/32" larger than the pilot hole, reportedly eliminating the problem of leaving a shoulder around the hole in the work. A hole running completely through the tool facilitates re-



moval of pilot. A special grade of carbide is available if counterbore is to be used on steel. Length and diameter of pilots furnished to standard sizes.

Use ACTION Card, opposite page 64. Encircle No. 60

### Speed reduction unit

New 100 Series Reductors feature compact design and improved worm gearing which are claimed to provide greater load carrying capacity with less weight and less space. Fins on housings improve heat dissipation. Fan-cooling is optional on larger sizes except compound units.

Reducers are available in 52 standard stock models, 283 different units with ratios from 5:1 to 3600:1 and output torque ratings from 40 in. lbs. to 9400 in. lbs. Boston Gear Works, Dept. B, 81 Hayward St., Quincy 71, Mass.

Use ACTION Card, opposite page 64. Encircle No. 61



Cincinnati  
Centerless  
Tool

*when only  
a diamond tool  
will do the job...  
ASCO has  
the answer!*

The right diamond for the right tool. Manufacturers: diamond tools, wheels, compound. Importers & dealers: carbons, borax, ballas. WRITE TODAY FOR FREE CATALOGS & LITERATURE.

**ANTON SMITH & CO. INC.**



Specialists in diamonds and  
diamond tools since 1908.

111 Eighth Ave., New York 11

Representatives: Territories Open; Inquiries Invited  
Encircle No. 492 on Card, Opposite Page 65

Precision Sharpen  
Your Die-Sinking Cutters  
on an **ALEXANDER**  
Bench Grinder!



Also 2- and 3-dimensional pantograph  
engraving machines.

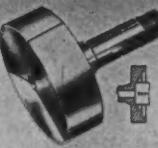
Write to Dept. A for catalog.

**J. ARTHUR DEAKIN & SON**  
150-28 Hillside Ave., Jamaica 32, N.Y.

Encircle No. 493 on Card, Opposite Page 65

## SPECIFY KASSON PRECISION COLLETS AND ATTACHMENTS

IMMEDIATE DELIVERY FROM STOCK



Step collet for accurate chucking to  $2\frac{1}{4}$ " dia. Soft head for easy boring. Lowest price on market! Models 3AT, 3C, 5C.

FOR ATLAS • LOGAN • SOUTH BEND CRAFTSMAN • SHELDON LATHES, ETC.

LEVER-TYPE DRAWBAR  $\frac{1}{2}$ " cap.



Positive grip on undersize, oversize or standard diameter work! Patented coordinate cams eliminate angles.

Let us quote on your quantity orders for any type of collet, live center or other machine tool attachment!

**KASSON**

*Precision*

KASSON Precision products are guaranteed unconditionally for accuracy, fit and long life. Your dealer should have them. Write us for literature.

KASSON DIE AND MOTOR CORP. | Integrity  
32-14 Northern Boulevard | Since  
LONG ISLAND CITY 1, N.Y. | 1919

Encircle No. 494 on Card, Opposite Page 65

326

## Automatic glass working machine

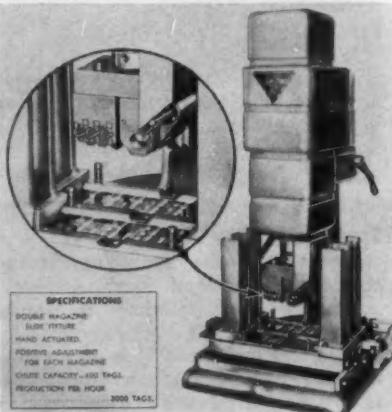
The Eisler automatic glass working machine performs the following operations on glass tubing: constricting or drawing a taper; cutting apart at the constricted area mechanically by cutting wheels or flame cutting by oxygen fires; flat or round bottom forming ball blowing any shape; glazing both ends; flanging or flaring either end.

Table carries the main bearings, hopper feed, glass forwarding mechanism, also glass cutter, while underneath the table all driving parts including motors and cam shafts are mounted. Eisler Eng. Co., Inc., 762 So. 13th St., Newark 3, N.J.

Use ACTION Card, opposite page 64. Encircle No. 62

## Name plate marking machine

The Cadillac No. 52 tag marker (Model MS) will mark consecutive serial numbers as well as interchangeable legends on two or more bosses. This machine is available with either hand lever operated (as shown) or air



**SPECIFICATIONS**  
DOUBLE MAGAZINE  
JARRE MITTER  
HANDBRAKE  
COUNTER ADJUSTMENT  
FOR EACH MAGAZINE  
CHUTE CAPACITY—400 TAGS  
REGISTRATION PER HOUR  
3000 TAGS.

operated feeding mechanisms. A re-stacking magazine enables plates to re-stack themselves in numerical sequence. Marker provides speeds of from 2M to 5M plates per hour. Cadillac Stamp Co., Dept. BB, 17315 Ryan Rd., Detroit 12, Mich.

Use ACTION Card, opposite page 64. Encircle No. 63

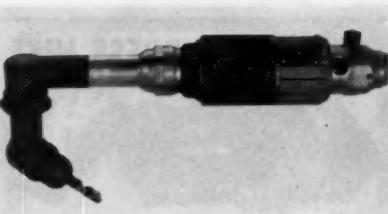
MACHINE and TOOL BLUE BOOK

## Drills for confined areas

Two new heavy-duty angle head drills, for drilling in confined or obstructed areas, are being produced by Buckeye Tools Corp., Dept. MTB, Dayton, Ohio.

Rated at  $\frac{1}{4}$ " capacity, these portable air-powered drills are offered with either  $90^\circ$  or  $360^\circ$  angle heads;  $360^\circ$  heads can be locked in any position within full circle, permit drilling at any angle. Low tool head height and elimination of all exposed moving parts are noteworthy features.

Both drills are available in lever or



lock button throttle models, in a choice of seven speeds, 3,500 to 300 rpm, and with  $\frac{1}{4}$ "-28,  $\frac{5}{16}$ "-24 or  $\frac{9}{32}$ "-40 spindles.

Use ACTION Card, opposite page 64. Encircle No. 64

**HIGH PRECISION** \*

**SV70**

**SCHAUBLIN**  
TURRET  
LATHE

35 years of study, work, and experience has made the Schaublin the leader in its class.  
**SPECIFICATIONS**

Height of center	$2\frac{3}{4}$ "
Bed length	$23\frac{5}{8}$ "
Bed height	$4\frac{3}{4}$ "

CARL

**hirschmann** CO. INC.

30 PARK AVENUE  
MANHASSET, N.Y.

• LOS ANGELES • MILWAUKEE • CHICAGO • DETROIT

Encircle No. 495 on Card, Opposite Page 65

## YOST DRILL PRESS VISE



This new Yost vise has been designed expressly for use on drill press operations. Does away with special and costly jig fixtures.

Offered in two sizes.

Vise No.	Width of Jaw, Inches	Opens Inches	Weight Pounds
1D	3½	4	12½
2D	5	3½	23

Do you need a vise of ANY type?

Write today for bulletins on the extensive Yost line

**YOST MFG. COMPANY**

124 GRANT ST.  
CAMBRIDGE SPRINGS, PA.

Encircle No. 496 on Card, Opposite Page 65

**NIELSEN**  
Heavy Duty  
*Live*  
Centers

Write for catalog on live centers

Adapted for heavy duty work. Precision type ball and roller bearings assure maximum capacity for high speed production and long service.

**NIELSEN, INC.** LAWTON, MICH.

Encircle No. 497 on Card, Opposite Page 65

## Greenerd

### ARBOR PRESSES

For Assembling: Key-way Cutting, Broaching, Piercing, Oil Grooving, Straightening, Forming, Pressing, and many other jobs.  
65 Standard styles and sizes.

From  $\frac{1}{4}$  to 20 tons pressure for manually operated presses.

From 1½ to 75 tons pressure for motor driven hydraulic presses. Originators of the Arbor Press.

Send for  
Cat. 40-H



**GREENERD ARBOR PRESS CO.**

141 CROWN ST. NASHUA, N.H.

Encircle No. 498 on Card, Opposite Page 65

**GRANT**  
RIVETERS..

PIONEERS  
and  
PACE-  
MAKERS  
in their line



—head rivets from smallest to  $\frac{3}{8}$  diameter either by NOISELESS SPINNING or VIBRATING HAMMER method—sizes to meet all needs—types include Vertical and Horizontal Multiple Spindles.

Write for literature and don't forget to send samples

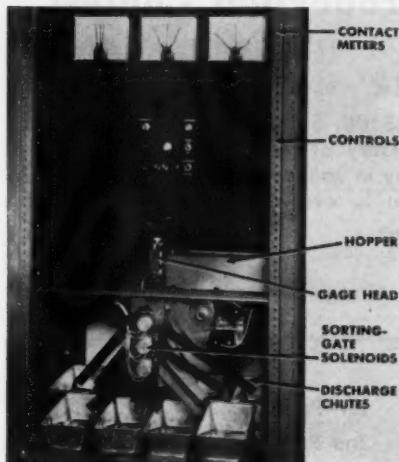
**THE GRANT MFG. & MACHINE CO.**  
CE Station Bridgeport 5, Conn.

Encircle No. 499 on Card, Opposite Page 65

## Gaging and sorting unit

An automatic inspection unit for gaging and sorting parts into five specific size categories plus oversize and undersize, at speeds of more than 3,000 parts per hour has been announced.

The Autosort Model 101, handles parts up to 3" length and  $\frac{3}{4}$ " OD, and can



be arranged for checking length, thickness, OD, or any other external measurement. It can be furnished with any size range desired from  $.0002"$  to  $.010"$ , and for sorting by increments as small as  $.000050"$ , depending on the range. Cleveland Instrument Co., Dept. B, 735 Carnegie Ave., Cleveland 15, Ohio

Use ACTION Card, opposite page 64. Encircle No. 65

When writing  
advertisers,  
please mention  
**MACHINE and TOOL**  
**BLUE BOOK**

## Now... a quality **JIG BORER**

that  
every shop  
can afford



The SIMA Jig Borer features an unusually large hand scraped table, providing 20" longitudinal and 15" transverse travel.

Utilizing the basic measuring system of "super accurate" end measures and .0001" dial indicators, close "tenths" tolerances can be maintained. 16 spindle speeds of 35-1500 rpm; and a "kwik-switch" spindle nose design facilitates use of standard tooling. Prompt delivery.

Write today for full details.

**AMITOOL COMPANY**  
629 MAIN STREET  
WESTBURY, L.I., N.Y.  
Westbury 7-3400

Encircle No. 500 on Card, Opposite Page 65

# \$2,500.00 IN CASH PRIZES!

## MACHINE and TOOL BLUE BOOK's 50th Anniversary Production Contest

Here's your opportunity to win \$1,000, \$500, \$300, \$200, or \$100 in cash prizes!! As a part of the 50th Anniversary of MACHINE and TOOL BLUE BOOK, which celebrates its 50th birthday in January, 1956, the BLUE BOOK will sponsor a production contest open to everyone in the metalworking industry.

### HERE'S ALL YOU DO:

1. Discuss in as many words as you need, any production technique or tooling idea or machining method used in your shop to increase production and/or cut costs. You'll merely want to describe the old method, the problem involved and the solution which answered the problem. Winners will be judged only on the job, or operation described and the savings which resulted.
2. The article need not be well written so long as the facts are there. Entries should be accompanied by photos and/or drawings. Drawings or sketches can be rough, penciled ideas.
3. Entries will not be judged on the basis of how well you write, draw, or how you present your material. The job is all that counts.
4. Attach an official contest blank to your entry and address it to: Contest Editor, MACHINE and TOOL BLUE BOOK, 222 E. Willow Ave., Wheaton, Ill. The entry blank appears on this page and will also be included in future issues of the BLUE BOOK. Additional copies of the entry blank will be sent on request.
5. Entries must be postmarked no later than January 31, 1956.

#### LIST OF PRIZES

1st Prize .....	\$1,000
2nd Prize .....	\$ 500
3rd Prize .....	\$ 300
4th Prize .....	\$ 200
5, 6, 7, 8, 9th Prizes	each \$ 100

6. All entries become the property of Hitchcock Publishing Company. However, if any article does not win, and is still published in a Hitchcock publication, you will be paid regular contributor's rates for your material. So, you can't lose!
7. Judges will be announced later.
8. There's no limit to the number of entries made by one person.

**You've done the job. Now write about it  
and win \$1,000 in cash!**

**MACHINE and TOOL BLUE BOOK's  
50th Anniversary Production Contest  
OFFICIAL ENTRY BLANK**

1. Everyone is eligible except employees of Hitchcock Publishing Company and their families.
2. Entry must discuss, in as many words as needed, a saving in cost, or time, made as result of an improved production technique or machining operation or tooling idea.
3. Entries should be accompanied by photos and/or drawings to better portray the job.
4. Contest opens November 1, 1955, closes February 1, 1956. All entries postmarked later than January 31, 1956, cannot be accepted.

Name: \_\_\_\_\_

Company: \_\_\_\_\_

Home Address: \_\_\_\_\_

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Title: \_\_\_\_\_

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ALSO

Planer-type MILLER up to 144" table length.

Write for Bulletins and prices.

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## CAMS

To Your Specifications  
except Screw Machine Cams

Design Assistance Offered

**KIDDE PRECISION TOOL CORP.**  
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### MAKE HARDNESS TESTS With The KING PORTABLE BRINELL

Puts a load of 3000 kg. on a 10 mm ball. Can be used in any position—even upside down. Removable test head for testing very large parts. Guaranteed to make accurate Brinell tests. Throat: 4", gap 10", wt. 26 lb.

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332



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BY A QUICK, EASY, INEXPENSIVE METHOD  
Your business letterhead will bring literature

WATTS BROS. TOOL WORKS  
Wilmersding, Pa.

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## MINIATURE DRILL BUSHINGS

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O.D. 3/32" to 13/64"

Lengths 1/4" to 3/4"

.0002 Tolerance on I.D.,  
O.D., and Concentricity

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Precision-Bored  
on Master Plates



DANNEMAN DIE-SET DIVISION  
ACME-DANNEMAN COMPANY, Inc.  
201 Lafayette St. New York 12, N.Y.

CATALOG  
ON REQUEST

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TRADE MARK REG. U. S. PAT. OFF.

**ANTI-FRICTION COMPOUND**  
In White Powdered Form  
COOLS HOT BEARINGS  
SAVES WEAR ON MOVING PARTS

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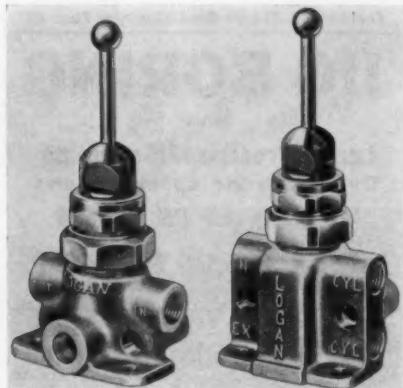
MACHINE and TOOL BLUE BOOK

### Air control valves with locking toggles

Three air control valves with locking toggles have been announced by the Logansport Machine Co., Dept. B, 803 Center St., Logansport, Ind.

Model 6664 is designed for control of bleeder and pilot-operated master valve. Removing plug in lower port makes 2-way valve into 3-way valve.

Dual control 2-way Model 6665 has two exhaust openings which permit



bleeding both ends of master valve alternately.

Model 6676 is a 4-way, 2-position valve with locking toggle lever, side or base mounting,  $\frac{1}{4}$ " port. It is designed for manual control of double-acting air cylinders. Locking position may be rotated  $360^\circ$ .

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Send for Complete Catalog No. 18  
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November, 1955

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Portable cabinet units in sizes 6" up to 24". Constant or variable speed drives with forward, reverse and cut-out switch. Five, seven or nine straightening rolls. Pinch rolls and all bottom straightening rolls power driven.



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### BARKER Bench Type MILL

for Production Milling  
of small parts by  
Unskilled  
Help



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**BARKER ENGINEERING COMPANY**  
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**NEW NESTING TYPE  
TOTE PANS**

Sturdy 16 ga. metal.  
20" long x 12" wide  
x 6 1/4" deep. Drag  
holes and handles at  
both ends.

**J. I. LUCAS & SON, INC.**  
Bridgeport 5, Conn.

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**READING BENCH  
KEYSEATER**

Portable — move  
directly to job; a  
time saver for  
both small and  
large shops.

3 3/4" stroke;  
adaptable for  
other work.

Low first cost,  
prompt delivery.  
Good dealers wanted.

**Reading Machine Co.**  
Cincinnati 37, Ohio



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**HAND KNOBS**

6 Sizes Cast-Iron  
Tapped, Reamed  
or Blank  
Hex-shaped hub for  
extra tightening

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**TIETZMANN TOOL CORPORATION**  
DEPT. H-K  
ENGLEWOOD, OHIO



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insist on famous  
**"Jorgensen"**  
REG. U. S. PAT. OFF.  
**"C" CLAMPS**

Also bar clamps, hinged  
clamps, spring clamps, etc.  
Send for Free 32-Page Catalog

**ADJUSTABLE CLAMP CO.**  
"The Clamp Folks"  
403 N. Ashland, Chicago 22, Ill.  
**ASK YOUR SUPPLIER**

**RUGGED!**



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**Make 3  
hammers  
AT ONCE!**

COMPLETE  
LEAD HAMMER  
SERVICE

It's the NEW, easy, economical, quick way  
to mold your own lead hammers on a pro-  
duction basis with "SHUR-GRIP" handles  
and this COOK production mold.

**Write for circular and prices**  
**LAWRENCE H. COOK, INC.**

67 MASSASOIT AVENUE, EAST PROVIDENCE 14, R. I.

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**JIG BORING**  
and  
**Large Precision Machining  
Done to your specifications**  
**WE HAVE 13 JIG BORERS**

**KIDDE PRECISION TOOL CORP.**  
25 LOCUST AVE.  
ROSELAND, N.J.

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**PYRO Radiation Pyrometer**



Determines spot  
temperatures of heat-  
treating furnaces, fire  
boxes, kilns and  
forgings accurately —  
instantly. No thermo-  
couplets, lead wires or  
accessories needed.  
Temperature is re-  
corded on a direct-  
reading dial at press  
of button. Two double  
ranges. Write for  
FREE Cat. No. 100.

**THE PYROMETER INSTRUMENT CO.**  
New Plant and Lab., Bergenfield 3, N. J.

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**SELLEW (adjustable)  
stock drillheads will  
greatly increase your  
drilling output**

**STOCK SIZES AS SHOWN**

No. 0-S (2 spin.)—drill cap. 1/8"  
No. 0-AD (3 spin.)—drill cap. 1/8"  
No. 0-D (3 spin.)—drill cap. 1/8"  
No. 1-D (3 spin.)—No. 1 M. tap.  
No. 2-D (3 spin.)—No. 2 M. tap.  
No. 3-D (3 spin.)—No. 3 M. tap.

**Send us your drilling  
requirements.**

**Sellew Machine Tool Co.**  
PAWTUCKET, R. I.  
Inc. 1910



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MACHINE and TOOL BLUE BOOK

### Cutoff wheels

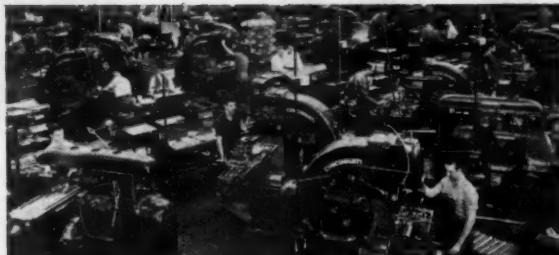
The B7 bond line of Aloxite aluminum oxide resinoid cutoff wheels are claimed to produce a faster, cooler cut. Sharp sides on all wheels prevent binding in the cut.

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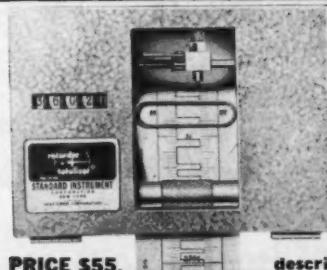
ceptable; "V" for rough work where maximum wheel life is the most important factor. Wheel sizes range from 6" to 20" dia. and 1/16", 3/32" and 1/8" thick. Metal bushings are supplied on all arbor holes in the range of 5/8" to 1 1/8". All wheels are available in 24 to 120 grit. Bonded Abrasives Div., Carborundum Co., Dept. RH, Niagara Falls, N.Y.

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BETTER PRODUCTION  
IN YOUR PLANT



#### TIME RECORDER-TOTALIZER



PRICE \$55.

- This precision instrument provides accurate, permanent, chronological data about any machine, process or system in plant or office ... on a continuous chart-roll which lasts four months. Uses no ink. Totalizer shows accumulated "on" time.

descriptive literature MT on request

STANDARD INSTRUMENT CORPORATION DIV.  
HEAT-TIMER corporation  
657 BROADWAY, NEW YORK 12, N.Y.

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# Mechanics Through The Ages



NOTED FOR THEIR TEMPER WERE THE **METAL ARROWHEADS** MADE BY THE SHEFFIELD CRAFTSMEN AND USED BY ENGLISH ARCHERS OF THE 1400's. THESE ARROWHEADS COULD EASILY PIERCE THE TOUGHEST ARMOR WORN BY THE FRENCH TROOPS AT THE BATTLES OF CRECY AND AGINCOURT.

...the Art of making saw teeth project alternately, right and left was known—and practiced—by the ancient

**ROMANS.**



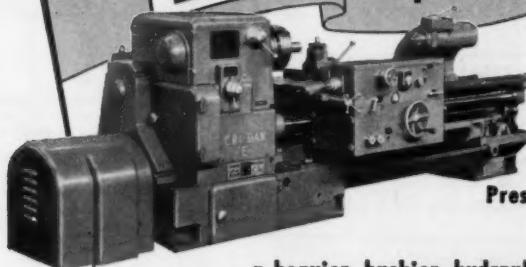
THE WORN OUT ENGINES FROM **RIVER STEAMBOATS** PROVIDED THE BLASTS FOR MANY AMERICAN IRON FURNACES DURING THE MID 1800's.



CRI-DAN

E

FOR EXCELLENCE  
in all Threading  
Operations



Presenting the

"E"

...a heavier, huskier, hydraulically controlled  
**CRI-DAN**

**It's Here—At YOUR Request.** The acceptance of the Cri-Dan single point threading method has resulted in a new, heavier machine of extended capacity. Precision threading PLUS secondary turning, boring, facing and chamfering facilities are incorporated. Complete hydraulic and electric controls assure maximum efficiency. These brief specifications will show the ruggedness and range of this, the newest and finest Cri-Dan ever developed. Write The Lees-Bradner Company, Cri-Dan Division for information of the processing of your parts.

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Max. Thd. Dia. (Internal) . . .	16" Dia.	Multi-Start Threads . . . . . Yes
Max. Thd. Dia. (External) . . .	12" Dia.	Spindle Speeds . . . 50-1400 RPM
Max. Swing Over Ways . . . .	25" Dia.	Main Motor . . . . . 20 H.P.
Max. Swing Over Tool Slide 12" Dia.		Floor Space Req'd . . . 5'6" x 14'0"
Max. Thread Length . . . . .	6½"	Approx. Weight . . . . . 4½ Tons
Length Between Centers . . . . .	2'6", 5'6" & 8'6"	

Cri-Dan Division

*the* **LEES-BRADNER**®  
CLEVELAND 11, OHIO, U.S.A. *Company*

Encircle No. 521 on Card, Opposite Page 65

November, 1955

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# The MARKET PLACE

Advertisements acceptable in THE MARKET PLACE include those for employment, sales services, production facilities, representation and related needs. Rates: \$20 per column inch per insertion. Maximum size advertisement accepted in this section is three inches.

Copy should reach us by the first of the month for next month's issue.

MACHINE and TOOL BLUE BOOK

A Hitchcock Publication

Wheaton, Ill.

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Sheet sizes

20" x 50"

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Wind ows  
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INDUSTRIAL PRODUCTS SUPPLIERS  
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Retrieves dropped screws, needles or parts.  
Removes chips and filings from threads, ways  
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### ALL METALS

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CORPORATION

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H & G DIE HEADS

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with Amidon Fittings  
and one inch pipe.

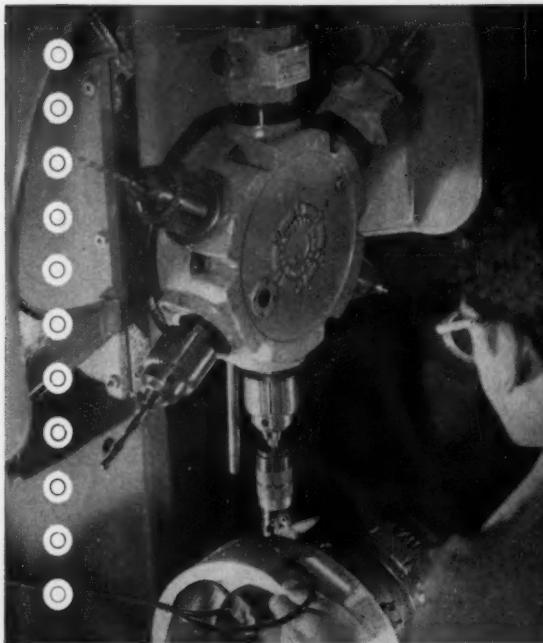
Amidon Engineering Co.  
ELYRIA 10, OHIO

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quick acting clutch. Foot operated, it leaves both hands free for material handling. Has a capacity up to 250 operations per minute of continuous operation. Requires only  $1/3$  hp motor and has direct V-belt drive. Alva Allen Industries, Punch Press Dept. B, Clinton, Mo.

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**TURRET DRILLS**  
Give 45% time  
savings on  
Missile Parts at  
**RHEEM**  
**MANUFACTURING**  
**COMPANY**

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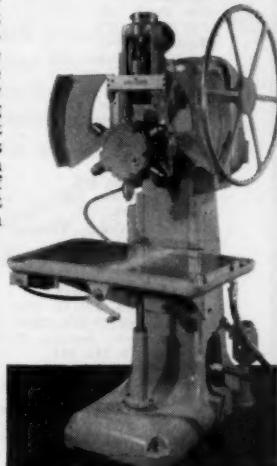
**BURG TOOL**

MANUFACTURING COMPANY, INC.

15001 S. Figueroa St., Gardena, Calif.

New York — Burgmaster Eastern Sales Division  
15 West 44th Street

Chicago — Burgmaster Machinery Co.  
5329 Lincoln Avenue



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# Whatever You Need,

## You'll Find It Here

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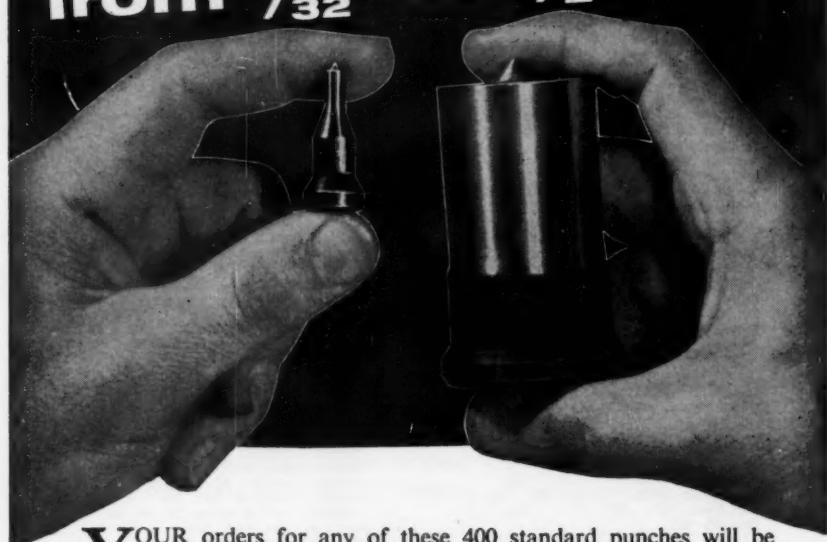
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AA-406



*Diamond Anniversary*



Established 1880

NEW YORK • CHICAGO • DETROIT • PHILADELPHIA • E. LANSING • OXFORD, O.

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November, 1955

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## POWER PRESSES — FABRICATING TOOLS

City Foundry Division • Small Tool Department

E. 40th & St. Clair Avenue • Cleveland 14, Ohio

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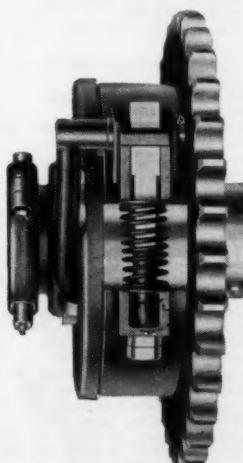
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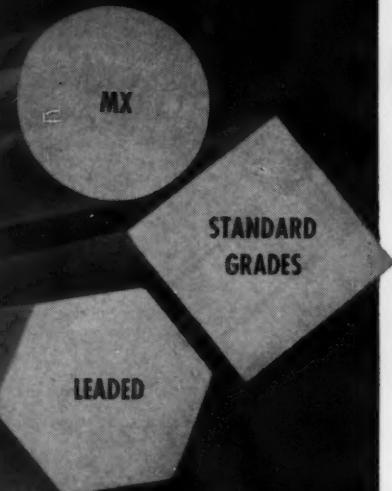
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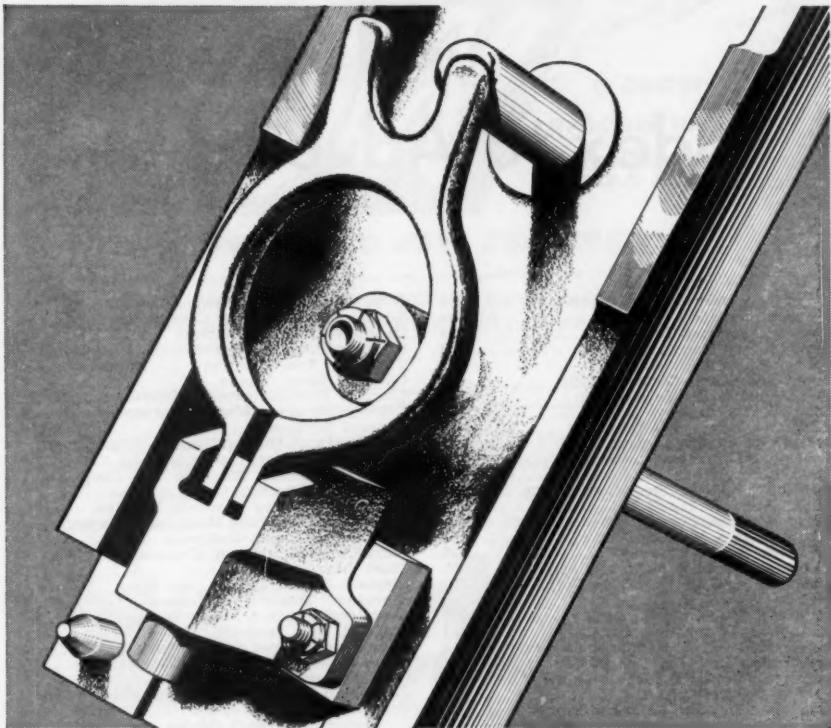
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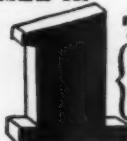
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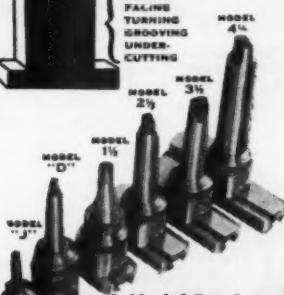
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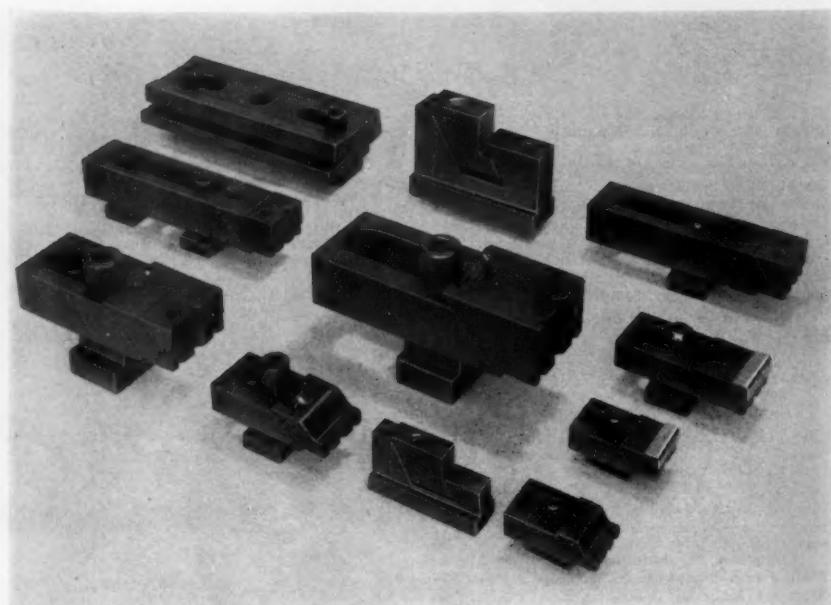
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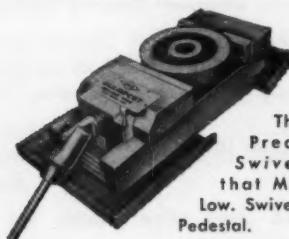
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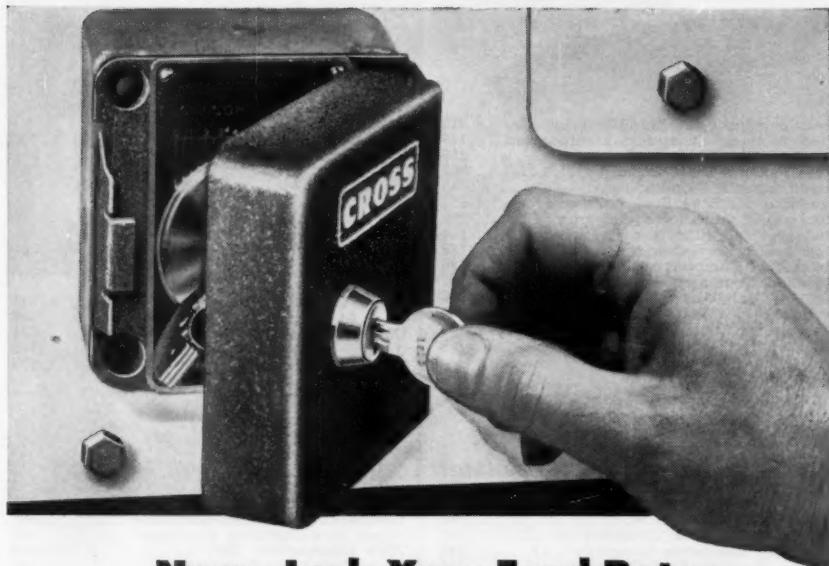
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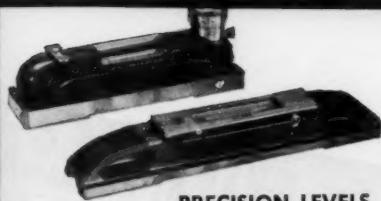
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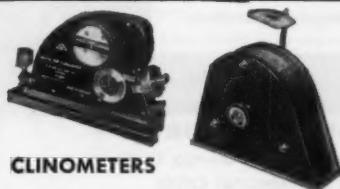
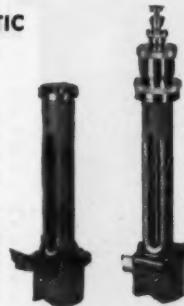


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Encircle No. 535 on Card, Opposite Page 65

MACHINE and TOOL BLUE BOOK

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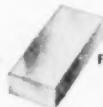
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